

FLIGHT

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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EDITORIAL COMMENT.

Military Trials Report.

The long anticipated report of the Judges' Committee on the Military Trials has been published, and so much of it as is not redundant to readers of FLIGHT will be found on another page. It is an interesting document, and will doubtless be read with the keenest attention by all, and particularly by the manufacturers who come in for its criticism. We should imagine, too, that it will give rise to discussion, and, as it happens to be part of the programme at the Aeronautical Society's meeting next Wednesday week, we anticipate that those who attend this opening lecture of the session at the Royal United Service Institution will experience an unusually lively evening.

As the Report is by no means lengthy, and is besides very concisely worded, there is scarcely any need for us to draw particular attention to its outstanding features. There are certain matters, however, with which we are sure everyone will feel sufficiently in accord to desire that they should be emphasised as much as possible. Among

them is the following remark: "The importance of encouraging or establishing a first-rate British aircraft engine industry cannot be over-rated."

That is well said, and we trust it will go home to those whom it most concerns, and if the Government can manage to squeeze a really substantial and adequate sum for aeronautics out of next year's estimates, they might do far worse than offer prizes for British-built motors of, say, 100-h.p. There are several British firms who are coming on the market with engines of about that rating, who need all the encouragement they can get from those who have the money to spend. A prize, while it has many disadvantages, does undoubtedly stimulate an interest that often otherwise lies dormant, and we believe that money thus voted will be a very useful first step towards the encouragement for which the Judges of the Military Aeroplane Competition have made such a strong appeal.

The Paris Show and its Moral.

The moral of the Paris Show is that military aviation is a national affair, in which the public is interested to see for itself what the Government is doing on its behalf with its money, and that we, in England, might well take a leaf out of our neighbour's book when the time comes next February, at Olympia.

Thousands of Parisians and thousands of their country cousins flock daily to the Grand Palais as a matter of course, just because it is the Grand Palais and there is something on. But, Frenchmen in their tens of thousands marched through the turnstiles when they knew that they were going to see an official exhibition of their beloved country's new arm of defence. And they could not help knowing, for the authorities saw to it that their show was well advertised. Waiving for the moment any question of the nation's dignity being satisfied with less than a first place in the sun, the practical aspect of the occasion was deemed to be better served by the modern artificial illumination of Paris, and on nearly every lamp-post hung a card inviting the pedestrian to read, mark, learn and inwardly digest the fact that the French Government was exhibiting its avions at the Salon.

What Frenchman could resist the subtle compliment, so skilfully paid in the full light of the lamp, to his patriotism and his intelligence? What Frenchman could refuse to pay a franc for the privilege of casting an approvingly admiring eye on the latest equipment of his army, albeit something about which he might be less

anxious to express a personal opinion than if it were the infantry's new headdress or overcoat? Certainly the Frenchman loves his official show, but wherein does he differ in this from the Englishman, pray? Would the critics innumerable of British aeronautical apathy be less willing to pay a shilling to see a similar exhibition in February? Would our Government evoke less interest by laying its cards, not necessarily the ace, thus frankly on the table on the floor of Olympia, to wit? In all humble sincerity of purpose, we invite Col. Seely and other high officials to take a hand in the game—they will never regret it.

What we want in this country, to make aviation go, is a little less inopportune criticism from the minority and much more well-sustained enthusiasm from the majority. As a race, we may not be spontaneously excitable, but we are not by any means the less susceptible to real feeling on that account. Given the opportunity, we are firmly convinced that if the British Government were to take a personal interest in the Aero Show next February, it would be doing immense benefit to the country, to the flight industry, and to itself. To the country, because it would induce thousands of people to go and look and come away and think, who previously had habitually waived aside the whole subject of aviation, as foreign to their minds no less than to their occupations. To the flight industry, because the sympathy of the people is an essential preliminary to the expansion of Naval and Military aviation, and is, therefore, of paramount importance to the development of commerce in aeroplanes.

It is the people who pay for national aeroplanes, remember, and the fact that many of them who do pay prefer to let others use the machines is of small importance for the moment, provided that the man who puts his hand in his pocket is not thereby made less willing to take out the money. The generalisation of flying will come in its own good time, and, incidentally, the Aero Show will sow many new seeds of desire that will bear fruit in due course by the accession of newcomers to the ranks of pilots. For the moment, however, we are more concerned with the influence of the Show on the people who have no particular desire to fly, as yet.

The Government could not possibly wish for a better opportunity; everything is prepared, and nothing is needed save, so to speak, the signature. It does not much matter what the exhibits are, but we would suggest that other exhibitors who happen to be supplying machines to the Government, be allowed to display one

of them on the Government's stand. It might, perhaps, be unfair for those other than exhibitors at the Show to have this privilege, and in any case they ought to pay for it on account of the floor space that they occupy, for even if the Government had no expense in the matter, that is no reason why the organizers of the Show should be out of pocket in consequence. We imagine that ways and means could always be found for giving effect to the principle once a general scheme has been accepted.

In Paris, the *clou* of the Show was a complete outfit for a flight squadron, consisting of a fleet of transport carriages and motor-cars, which are in attendance on pilots in the field. In the gallery, Government machines were shown by the score. Imagine the effect of such an official display by the War Office at Olympia! And, perhaps, it might swell the public's enthusiasm and national pride too rapidly to see so much at once: we adhere to our original suggestion, that the exhibit might be confined to examples of British construction actually on order from the other British exhibitors. By all means, let this be done if it possibly can be accomplished, and surely, what with the Royal Aero Club and the Society of Motor Manufacturers and Traders at the head of affairs, there ought not to be much difficulty in untying any knots there may be in the red tape. The Society of Motor Manufacturers and Traders, which takes the financial risk of the Show on its own shoulders, out of sheer kindness of heart towards the little stranger that was virtually born in its midst, deserves no less than official recognition and support in their generous enterprise. The Government might well give so much as this, if only out of respect for the spirit of pious teaching that there is a Power above who helps all those who try to help themselves.

Prizes for Models.

In this week's Royal Aero Club official notices on page 1001 an important announcement appears in regard to the offer of a series of prizes for models, including hydro-aeroplane models to be exhibited at the Olympia Aero Show next February. This splendid official encouragement should greatly help forward the more practical and scientific study and construction of models upon lines which have been so consistently advocated in the pages of FLIGHT. By a careful study of the model section appearing in FLIGHT weekly, where the competitions will be kept in view, our readers, we hope, will be greatly helped to secure many of the prizes offered.

FRENCH MONUMENT

THE Aero Club de France intends to erect a monument at Auvours to the memory of Wilbur Wright, and is desirous of obtaining as many names in support as possible. Mr. F. S. Lahm, writing on behalf of La Commission du Monument Wilbur Wright, invites small subscriptions, and in order that the names may swell the lists of the published French subscriptions and the British Fund list, it has been arranged that those coming from England shall be divided equally between the French Monument Fund and the Wilbur Wright Memorial Fund already opened in England.

No doubt many friends and admirers of the pioneer of flight would like to be associated with the erection of the Monument in France on the scene of Wilbur Wright's first triumphs, and their subscriptions will be acknowledged in FLIGHT and in the Paris newspapers. Subscriptions to this joint fund may be sent to Mr. Griffith Brewer,

TO WILBUR WRIGHT.

33, Chancery Lane, London, who will divide the subscriptions equally and who now acknowledges the following amounts:—

	£	s.	d.		£	s.	d.
Mr. F. McClean	...	10	10	0	Miss Betty Brewer	...	1 0 0
Mr. Alec Ogilvie	...	10	10	0	Dr. William J. S. Lockyer	...	1 0 0
Mr. Griffith Brewer	...	10	10	0	Mr. Horace Short	...	1 0 0
Mr. T. P. Searight	...	2	2	0	Mr. Eustace Short	...	1 0 0
Lord Montagu	...	1	1	0	Mr. Oswald Short	...	1 0 0
Mr. H. Massac Buist	...	1	1	0	Master Cyril Brewer	...	1 0 0
Mrs. Griffith Brewer	...	1	1	0			
Hon. Mrs. Assheton							
Harbord	...	1	1	0			
							43 16 0

The subscriptions most desired are those of £1 each.

British Pilots Mounting Up.

IN spite of the wretched weather with which these islands have been favoured during the past few weeks, the Royal Aero Club official notices supply evidence that a goodly number of pilots are

able each week to qualify for their certificates. Last week eleven *brevets* were awarded, and another ten were granted at Tuesday's meeting. This carries the total number issued to 355, the holder of this number being Mr. D. C. Ware, who has been taught at the Deperdussin School at Brooklands.

NOVEMBER 2, 1912.

FLIGHT

MEN OF MOMENT IN THE WORLD OF FLIGHT.



The Chairman of the Public Safety and Accidents Investigation Committee: Col. H. C. L. HOLDEN, C.B., F.R.S.

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MILITARY TRIALS.

REPORT OF JUDGES' COMMITTEE.

BELOW, we publish so much of the text of the report of the Judges' Committee on the Military Aeroplane Trials, 1912, as consists of new material not hitherto available. Much of the report is devoted to descriptions of the tests themselves, which were duly described in *FLIGHT* during the course of the event. References to the different machines also contain summarised particulars of their dimensions and performances, which were also published at the time of the Trials, and appeared in our various tables. A large section of the report contains appendices with the full text of the conditions, &c., &c., and there are several large charts showing the gliding angles of some of the machines. Most of the information cited above would be redundant in *FLIGHT*, and lack of space prevents its publication in the present overcrowded issue. We have, however, inserted in brackets references to back numbers of *FLIGHT* where matter omitted from the following *précis* will be found. In order to save repetition of references the following summary of the material that has appeared in *FLIGHT* may be useful:—

Original conditions Dec. 23rd, 1911	Table of entries ...	Page 704	Gliding angle ...	Page 746	Summarised tables
Supplementary conditions Page 464	Table of engines ...	722	The awards ...	786	Page 812 <i>et seq.</i>
Resumé of conditions ... 702	Speed measurement ...	745	Table of results ...	796	

Conditions.—Thirty-two entries were received, and twenty-five aeroplanes were delivered to take part in the competition. Four of these machines were in such an incomplete state that they were in large measure built in the sheds on the competition ground. Two machines, the Aerial Wheel monoplane and the Piggott biplane, had not made a flight by the twenty-fourth day of the competition; the competitors who entered these machines were then instructed to withdraw them. Several other entries suffered from being either unprepared or untried.

Assembly.—Speaking generally, the monoplanes were superior to the biplanes in this test, and though one biplane, the Avro, completed it in 14½ mins., another—that of the Aircraft Co.—took 9½ hrs. to assemble and leave the ground.

Design, construction and standardization of parts.—The Judges' Committee examined and compared the details of construction of all competing machines, the staff of the Royal Aircraft Factory being called in to assist in making such measurements and expert examinations as were required for the purposes of accurate comparison.

The Judges' Committee also individually and collectively examined all competing machines for convenience of handling, accessibility of all controls, and such other details as ease of communication between pilot and passenger, method of fitting dual controls so that they could be operated with equal ease, or nearly so, from either pilot's or passenger's seat, comfort, &c.; they also took careful note of the design of the landing gear of every competing machine in order to form an opinion of its efficiency apart from the skill of the pilot.

The competitors gave every assistance during these examinations, and though only a few produced drawings it was possible to arrive at definite decisions as to relative merits in the matter.

Gliding test.—The results showed that the tendency of pilots was to cause their aeroplanes to travel at too low a speed for the best gliding angle to be attained. For example, one competitor obtained a best gliding angle of 1 in 6·7 at 92 ft. per second, and a worst angle of 1 in 5·5 at 78 ft. per second.

Landing on grass.—The ground selected for this test consisted of a level expanse of short grass, the surface being firm. The pilot was told to approach the landing place at a height of about 100 ft., descend by a *vol plané*, land and stop in the shortest distance possible. He was allowed to approach the ground as slowly as he could, and to twist and turn after landing. The distance was then measured in a straight line from the point where ground was first touched to the most distant point of the track made by the aeroplane. As a matter of fact, however, all the competitors ran their machines practically straight after landing.

One competitor (Mr. Cody, No. 31) had fitted a brake which he could let down for landing and draw up from the pilot's seat before starting. This consisted of a chain looped round his skid, and the run of his aeroplane was thereby considerably lessened.

Ease of steering the aeroplane on the ground.—In this test the pilot was instructed to run his aeroplane along the ground as slowly as he thought fit, and to steer it in circles and figures of eight, under observation. Steering is largely obtained by the draught of the propeller slip stream acting on the rudder, and the response of the machine is usually best when the speed of travel is high, though for manoeuvring purposes there is utility in having prompt response when the speed is small. Accidents have, for example, occurred from a lack of manoeuvring power on the ground when nearing a crowd or obstruction. For this reason, aeroplanes in which the propeller is fitted behind the planes and, therefore, nearer the rudder, have some advantage, e.g., the Cody, Farman, and Mersey. Some aeroplanes obtain greater control on the ground by a steerable wheel or skid, by means of which they steer after alighting from a glide with the engines stopped, or when, the wind being behind them, the propeller slip stream becomes less effective. The competing aeroplanes fitted with this type of auxiliary were the Avro and Breguet. The aeroplanes entered for the trials, for the most part, steered pretty well on the ground.

View.—The field of view of pilot and observer was measured by placing the aeroplane on a floor marked in squares. An observer seated in the machine marked the "dead area" on a sheet squared to correspond with the floor marking. A small correction for the varying heights of machines made this method an accurate one.

Order of importance.—The Judges' Committee placed the requirements called for in the competition in the following order of importance, and assigned value to them accordingly:—Speed, including flexibility of speed, climbing, gliding, landing, view, starting; communication between passenger and pilot, and dual control; sound construction throughout, interchangeability of parts, and compactness and convenience of handling. No competing aeroplane had a silenced engine, and, therefore, the difficulty of measuring relative efficiency in this particular did not enter into the awards. The low position in the above list given to sound construction is due to the fact that those aeroplanes which were considered in the awards all complied generally with the broad requirements in this respect. The difficulty of judging accurately the capability of an aeroplane to face rough weather is so great that, in spite of its supreme importance, it was considered unwise to allot a high value to it. The Judges' Committee, however, included this kind of stability among other impressions of general excellence which they formed during the course of the trials, and to which due weight was given.

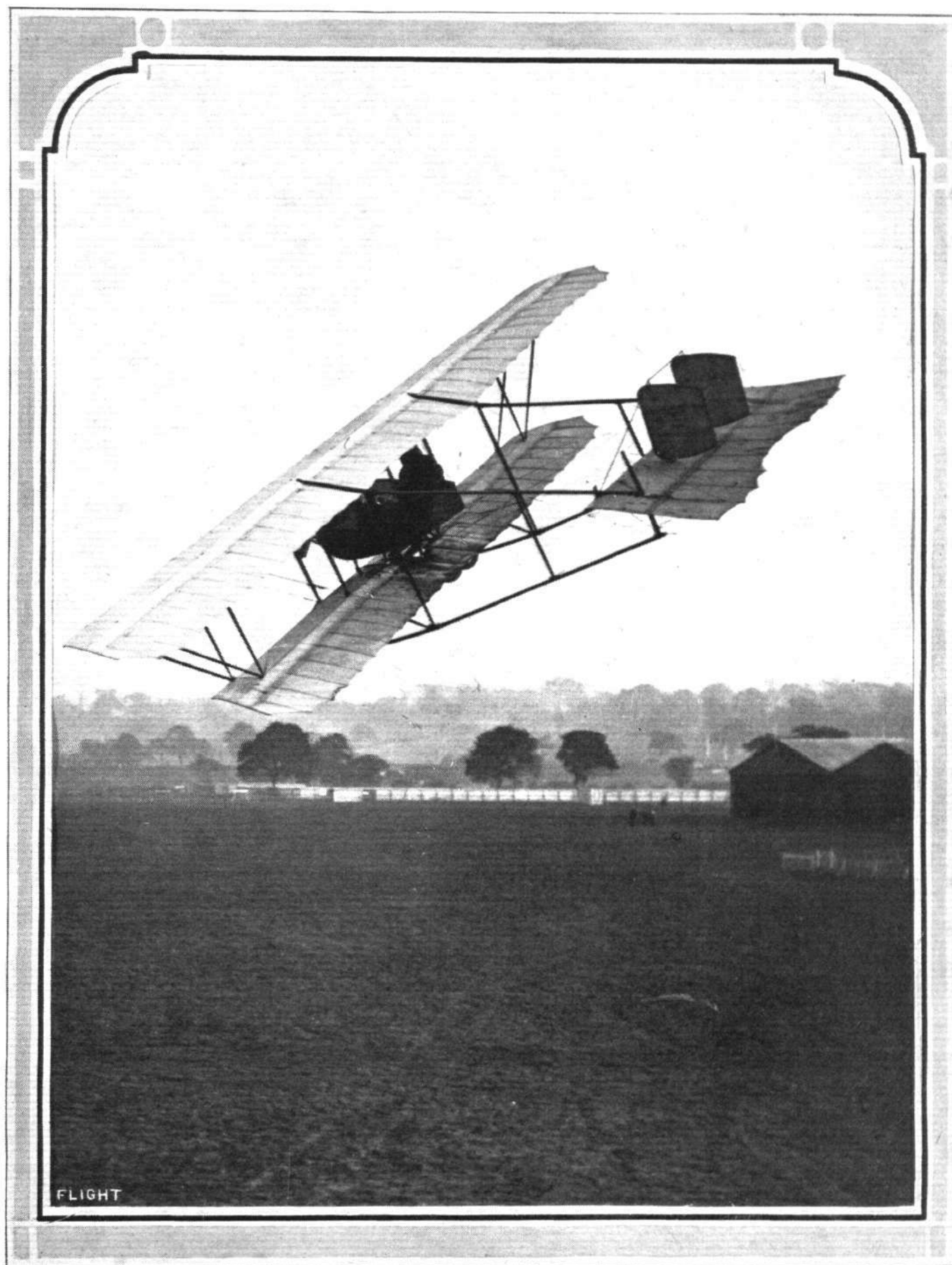
General Remarks.

Requirements generally complied with.—When the conditions of the competition were first published they were criticized in many quarters as being too severe. The tests, however, have been surmounted by machines of widely different types, in some cases with considerable margin to spare.

Flying in wind.—The unfavourable weather brought out the fact that, though normally a natural reluctance is felt to flying in winds of 20 to 30 miles an hour when there is no object to be gained, this can be safely accomplished by most machines of a good type. Moreover, once the aeroplane is clear of the ground, the flyer's objection to wind appears to be based chiefly upon the fatigue induced by keeping uninterruptedly on the alert. In a flight of a duration as long as three hours, the element of fatigue is an important consideration; improvements in design or mechanism may, however, overcome this difficulty, and allow of prolonged flights in winds of high velocity.

No really "Military" aeroplanes entered.—Of the 10 aeroplanes placed in order of merit, the first five were machines which had not been specially designed for the competition. The qualities asked for in the published "Specification of a Military Aeroplane" were, in fact, the attributes of a successful flying machine, and were only in a secondary sense Military requirements. The judges formed the opinion that only in one case, the Mersey aeroplane, had an endeavour been made to fit the design to the requirements of actual war, although some designers in evolving an efficient flying machine had, at the same time, produced an aeroplane which, with some modification, might be made a useful craft for fighting or reconnaissance. The Judges' Committee, however, did not feel justified in giving weight to any Military considerations except those expressed or implied in the original conditions. Had they done so, the superiority of Mr. Cody's biplane would have been further accentuated.

Engine developments.—It is the duty of the Judges' Committee to point out that all the aeroplanes which passed the tests, and those others which, although not entirely fulfilling some conditions, have been recommended for awards, were fitted with foreign engines. The longer period of development abroad, which has standardized certain foreign engines, has been greatly in favour of foreign manufacturers, as there is a prospect of purchasers obtaining these engines on a definite date, and of their conforming to a general standard. Two foreign engines of the same type were failures, and spoiled the chances of two aeroplanes of British design, but, on the whole, the foreign engines were trustworthy and efficient.



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A fine banked turn by Mr. Sydney Pickles on the Caudron biplane at the Hendon aerodrome.

Although the promise of the four types of British engines entered in the competition is hopeful, they have not yet proved themselves capable of equalling the performances of the best foreign high-powered engines.

The importance of encouraging or establishing a first-rate British aircraft engine industry cannot be overrated.

Order of Merit Obtained.

Ten of the competing aeroplanes were placed by the Judges' Committee in order of merit as follows:—

1. Cody biplane (British), No. 31.
2. Deperdussin monoplane (French), No. 26.
3. { Hanriot monoplane (French), No. 1 ... } Equal.
4. { Maurice Farman biplane (French), No. 22 ... } Equal.
5. { Blériot tandem monoplane (French), No. 4 ... } Equal.
6. { Hanriot monoplane (French), No. 2 ... } Equal.
7. { Deperdussin monoplane (British), No. 21 ... } Equal.
8. { Bristol monoplane (British), No. 14 ... } Equal.
9. { Bristol monoplane (British), No. 15 ... } Equal.
10. Blériot Sociable monoplane (French), No. 5.

Certain of these aeroplanes did not fulfil some one of the requirements called for, but all were considered to be efficient machines. The standard of excellence attained by several of the competing aeroplanes brought them very close together in the final assignment of positions in the order of merit, although their particular merits were of a widely varying nature. The Judges' Committee were unanimous in the selection given above.

Summary of Attainments of various Aeroplanes Tested.

Cody Biplane, No. 31 (see FLIGHT p. 808).

The Cody biplane is a heavy machine, strongly and somewhat roughly constructed. In range of speed (a variation of 24 miles an hour between maximum and minimum flying speed) and in the field of view afforded to pilot and observer, it excelled all other competitors, its nearest rival in these respects being the Maurice Farman. A remarkable feature is the combination of a speed of over 72 miles an hour with the power of stopping, after landing, in 56 yards. The powerful engine seemed to work satisfactorily. The pilot can start the engine from his seat, or, if that device should fail, is able, by throttling the engine, to swing the propeller and clamber into his place while the aeroplane stands still with the engine running. Mr. Cody achieved all the tests without difficulty. The judges formed the impression that the machine had not been pressed to the utmost, and that some of the results might possibly have been improved on. On the results obtained, however, this machine was easily first.

Deperdussin Monoplane, No. 26 (French) (see FLIGHT, pp. 675, 703, 710, and 810).

The Deperdussin monoplane (French) is a well-designed and well-constructed aeroplane of a type of general usefulness. The speed test was somewhat affected by a difficult wind, and an allowance is due to both speed and speed range for this reason. This aeroplane was the first to finish all the tests, which were attacked without regard to favourable conditions of weather, a method of procedure which impressed the judges as implying a certain confidence in the stability and airworthy qualities of the machine.

The observer is seated behind the pilot, and, speaking generally, owing to his position in relation to the wings, a better view is obtainable by him from this monoplane than from most others of similar type. The controls are well designed and good.

Making due allowance for the exceptional skill of its pilot, the Deperdussin monoplane gave the impression of being usually stable and easy to handle in the air. The landing chassis does not seem very strong, but the machine landed on and rose from hard or soft ground with equal facility.

Hanriot Monoplane, Nos. 1 and 2 (see FLIGHT, p. 676).

The Hanriot is a well-constructed and highly standardized aeroplane, designed largely for speed. It has a rather small wing area. The two machines entered are practically identical, and attained the highest speed of any aeroplane in the competition. The range of speed obtained by No. 1 appeared to be at the expense of safety, for the aeroplane was unstable at slow speed. These machines, although steady enough when in the air, appeared to be somewhat difficult to land, and both of them exceeded the specified limit of 75 yards in their run after touching the ground.

The discomfort caused by propeller draught is very noticeable to the observer, and the view is limited.

Aircraft Company's, Maurice Farman, Biplane, No. 22 (see FLIGHT, pp. 603, 673).

The Maurice Farman biplane differs greatly from any other machine in the competition by reason of its very large wing area and comparatively light weight. It is a singularly stable machine, very easy to control, and with some power of recovery, both longitudinally and laterally, from the disturbing effect of wind gusts. In range of speed it excelled all competitors except the Cody, but in actual speed it only just passed the minimum required.

This aeroplane may be considered a very safe machine, and valuable for instruction and practice.

Blériot (Tandem) Monoplane, No. 4 and Sociable (No. 5) (see FLIGHT, pp. 627, 649).

The Tandem Blériot (No. 4) is a very attractive machine, light, stable, and strongly constructed. The view is good for a monoplane. The observer is seated behind the pilot. The fuselage is, in accordance with the usual Blériot custom, not cased in.

This machine, very skilfully piloted, passed all the tests, but with not very much to spare. This was mainly due to the fact that a Gnome engine of only 70-h.p. is fitted. It would still appear to be the case that, although the light single-seater Blériot machine, built to suit the 50-h.p. Gnome, has, perhaps, up till now, been more successful than any other single-seater monoplane, considerable difficulties are experienced when a more powerful type is called for.

The above remarks also apply to a certain extent to the side-by-side (sociable) seater of the same make (No. 5). The fuselage of No. 5 is cased in. It appeared to be less stable than No. 4. The view is good.

Deperdussin Monoplane, No. 21 (British) (see FLIGHT, pp. 675-703, 710 and 810).

The British Deperdussin monoplane is very similar to the French pattern. The observer's seat is, however, in front of that of the pilot. In workmanship and finish the foreign machine is superior. The British entry showed signs of somewhat hurried construction.

No serious effort was made until August 24th to put this machine through any test, and naturally the pilot (who, at the last moment, took the place of the original pilot) found the time insufficient. The three hours' consecutive flying was achieved, but the height of 4,500 ft. was not attained on the first trial on account of dense clouds, and on the second owing to engine stoppage.

Bristol Monoplane, Nos. 14 and 15 (see FLIGHT, p. 698).

The Bristol monoplane is a well-designed and well-constructed machine. It is, however, heavy for its wing area, and has very little reserve of power when fully loaded. The two machines, Nos. 14 and 15, are practically identical, the differences in results being probably due partly to pilotage and partly to engine tuning.

These monoplanes are comfortable to sit in, the observer is, to some extent, protected from propeller draught, and the view is fair. If made somewhat lighter, or if not required to carry full load, they would be very efficient machines.

A. V. Roe and Co.'s Avro Biplane, No. 7 (see FLIGHT, p. 719).

The Avro biplane is remarkable for the peculiarity of its construction, the pilot and observer being completely enclosed in a cabin with windows. This innovation has undoubtedly some advantages: rain makes but little difference to the comfort of the pilot, and propeller draught is not noticeable. There are also, however, disadvantages, the chief being restriction of view. The machine is well designed and of good construction, but, was, for the purposes of these trials, under-engineed, the power being insufficient to give the rate of climbing required. Also, owing to the small size of wheels used, and the fact that the central skid is fitted very near to the ground, rising from ploughed land was quite impossible.

Mersey Monoplane, No. 19 (see FLIGHT, p. 755).

The Judges' Committee are of opinion that the machine possessed some original and useful features, but that its constructional details were capable of improvement, having been designed and carried out in a somewhat hasty manner. As the three hours' test was not effected, the ability of the machine to carry the requisite load was not proved, but it is possible that it might have done so, owing to the believed small fuel and oil consumption of the engine.

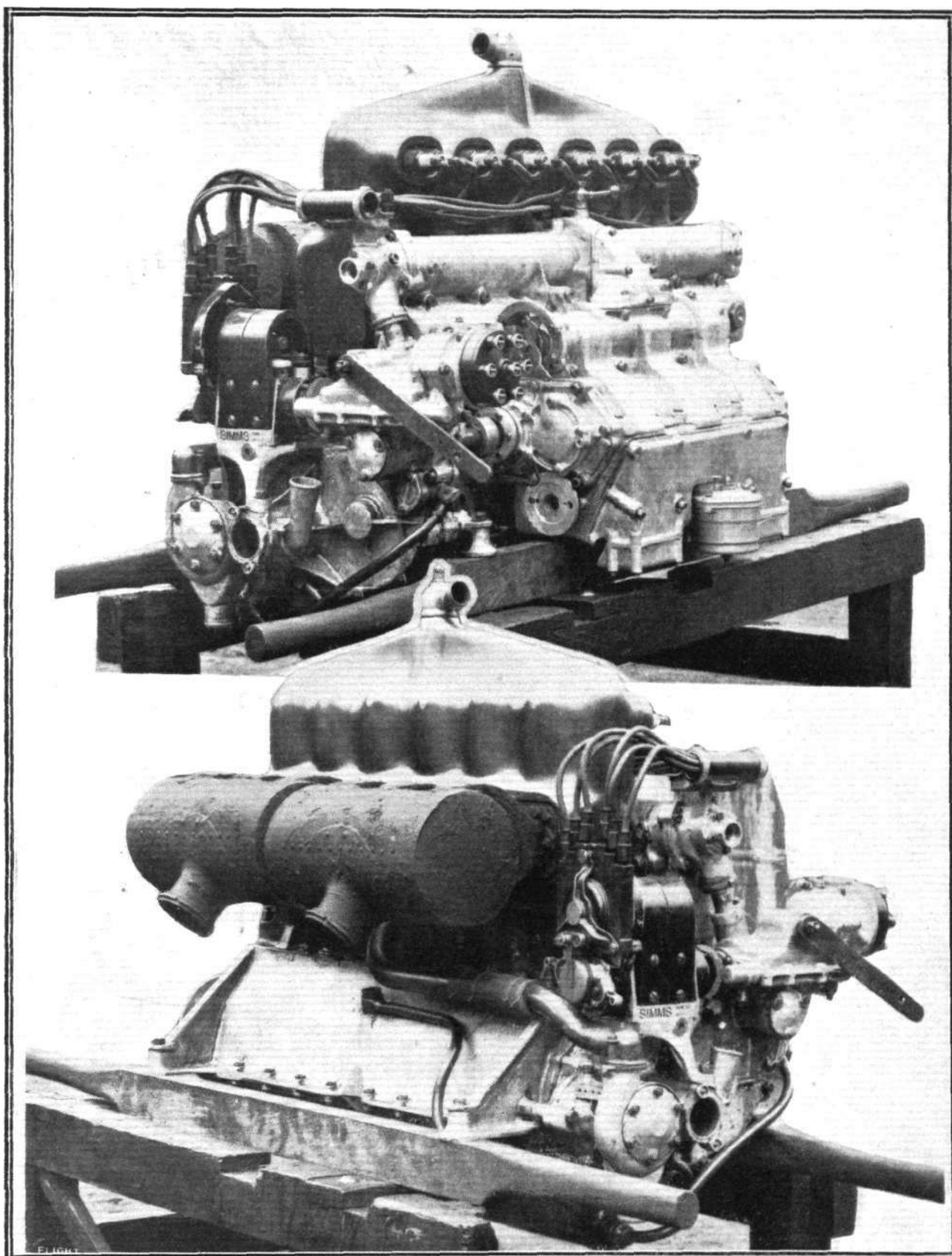
The Judges' Committee desire to express their profound regret at the death of Mr. Fenwick, a man of most attractive personality and of great promise as a pilot and designer.

Conclusion.

The Judges' Committee wish to record their appreciation of the admirable spirit shown by the competitors and pilots engaged in these trials. No personal difficulty or trouble of any kind arose, and it seemed to be the desire of all to ensure a fair and unbiased trial of efficiency and the success of the most deserving. Owing to the persistently unfavourable weather, the judges were compelled to proclaim as "flying weather" every interval when the wind moderated at all, but the pilots, almost without exception, ascended cheerfully under weather conditions that were sometimes not very attractive.

The detailed arrangements for the trials were made by the officers of the Military Wing, Royal Flying Corps, and they, assisted by a number of Staff College Students, who volunteered for the work, by the officers of the Central Flying School and the Staff of the Royal Aircraft Factory, acted throughout as observers, timekeepers and weight-checkers. To these officers and to Mr. H. E. Perrin, Secretary of the Royal Aero Club, who also helped throughout the trials, any success which may have attended the competition is due.

The report is signed by David Henderson, Brigadier-General; Godfrey Paine, Captain, R.N.; Mervyn O'Gorman, Superintendent, R.A.F.; F. H. Sykes, Major (Secretary).



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OUR BRITISH AERO ENGINES.—The 100-h.p. 6-cyl. N.E.C. We publish the above interesting photographs as a preliminary reference to the new 100-h.p. N.E.C. two-stroke engine which is about to be placed on the market. An article thereon, accompanied by further photographs, will appear shortly. Great importance attaches to the advent of this motor, for it is not only of the rating that is so much in demand among aeroplane constructors, but it is also of a type that has been conspicuous for its reliability in the smaller model that Mr. Alec Ogilvie has been using for several years on his Wright biplane which he is now flying at Eastchurch.

The Paris Aero Salon



By OUR SPECIAL COMMISSIONER.

Paris, Friday afternoon, October 25th.

As usual, there is the trouble of getting Press passes. Although one takes the precaution of making a request for these necessary permits at least a week before the opening of the Salon, to call at the Bureau de l'Administration and fetch them away at the first time of asking is a feat that, I believe, has never up to the present been accomplished. You demand passes, you plead for passes. No! your letter has not arrived, or, at any rate, they've not got it, and it will take two days to go through the necessary formalities for obtaining the precious permits.

Cards giving admittance to the inauguration, and that alone, seem to be fairly plentiful; so you get a few of these.

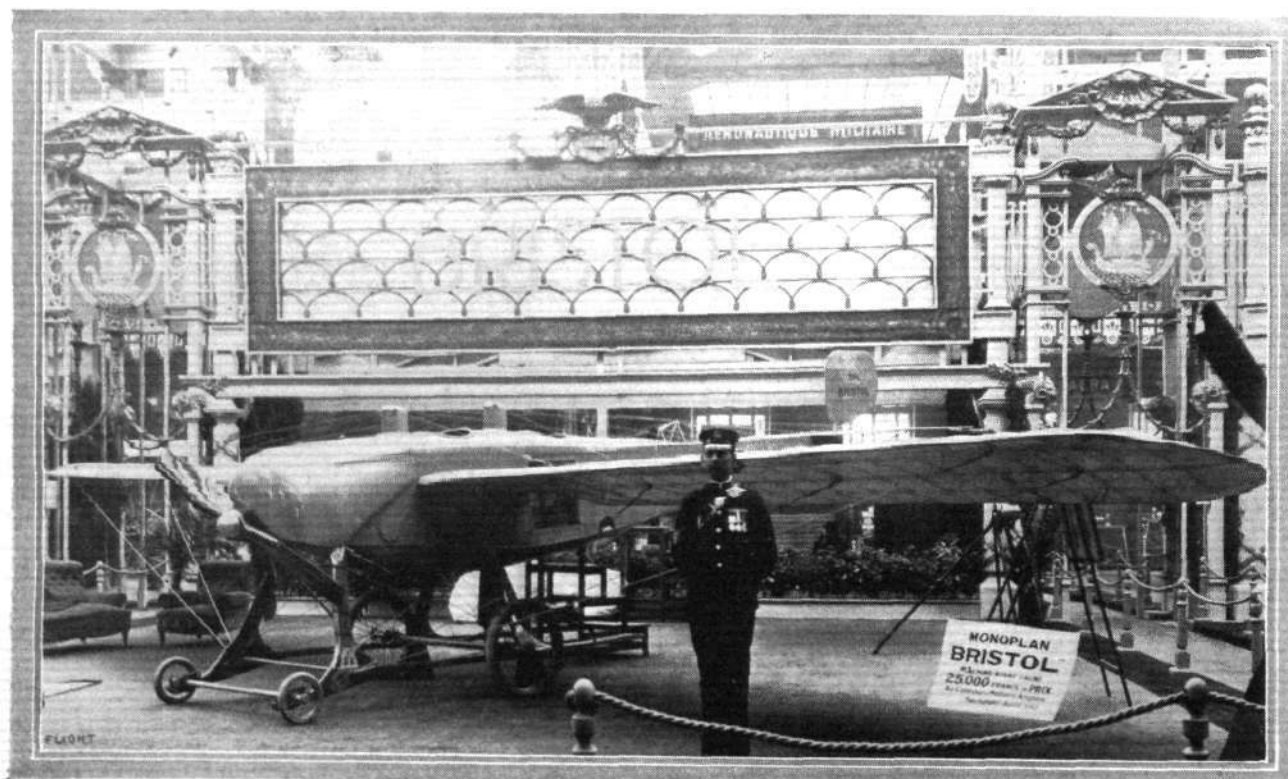
Having finished with the Bureau, you begin to feel inquisitive as to what is afoot inside the Grand Palais. You want to see the stands. But the gold-braided official at the door says you can do nothing of the sort unless you present to him a certain type of pass that you have failed to obtain downstairs. The inauguration permit cuts no ice at all. You take the only course open. You choose another entrance and march boldly in, assuming an expression calculated to delude the commissaire into imagining that you own the place. As a matter of fact, this ruse was highly successful, red-tapeism was vanquished and we were inside.

What a state of confusion the place presents! Quite half the machines had not arrived, and very few of those that were there were anything like erected. You know that by to-morrow the exhibits will be complete, all the carpets swept clean, the paths gravelled, and flower-beds laid down, and you wonder how it can possibly be done in the time. The scheme of decoration is wonderfully complete, and highly artistic. No expense seems to be spared in providing the best possible setting for the machines displayed. The key-note of the colour scheme is blue and gold.

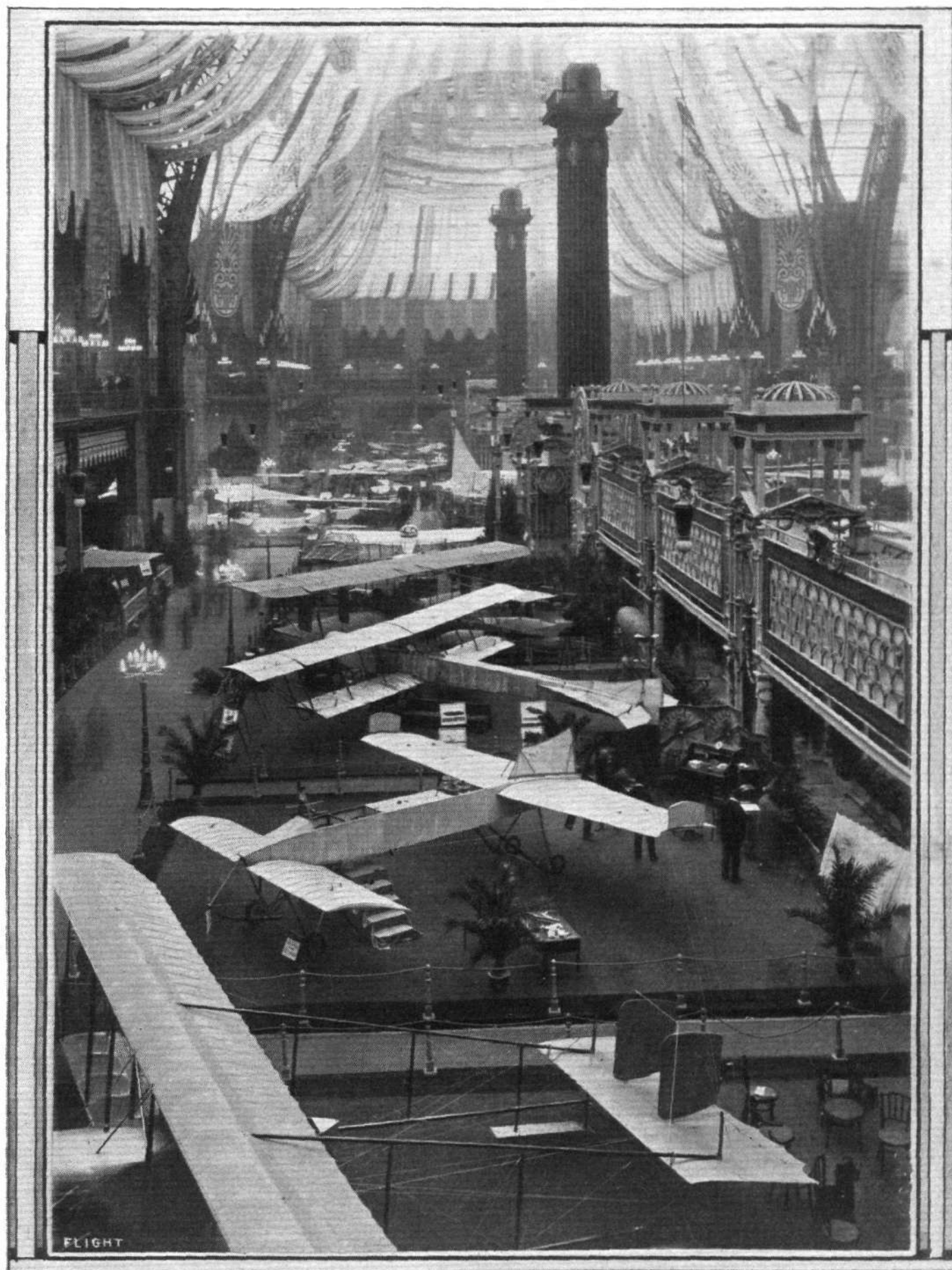
Blue and white streamers depend from the roof, hiding the crudeness of the steel and glass construction. Beneath the central dome are eight stands, and above each hangs an elaborate circular pendant bearing the name of the stand-holder. On either side two large gilt columns rise from massive pedestals, and beyond these are more stands. From the gallery, a very comprehensive view is obtainable of the activity all around.

On the Henry Farman stand, the other side of the Grand Nef, is a beautifully-finished hydroplane. It is resting on a large shallow wooden tank, which some workmen are filling with water in order to lend an air of realism to the exhibit. Other workmen are busy with polishing rags putting the finishing touches on metal and paintwork.

There is a commotion at the side entrance, and a shop-grey painted lorry drives in, towing behind it, tail first, the celebrated 140-h.p. Deperdussin monocoque which Vedrines piloted to victory in the last Gordon-Bennett Race. It arrives at its stand below one of the huge columns, where M. Armand Deperdussin, in a jubilant mood, is dividing his time between directing operations, chatting to personal friends, and replying to the questions of interviewers. At the far end, against the side entrance, the two Caudron brothers, René and Gaston, are superintending the erection of their 80-h.p. Gnome-engined biplane and their neat and rakish racing monoplane. Walking round the gallery, to get a different view of the proceedings, we come across a stand which shows signs of intense activity. They have only got to the stage of laying the carpet, so delicate an operation that no fewer than fifteen blue trousered workmen are attending to it, superintended by the particularly officious proprietor. Three sides had already been nailed down, and the fifteen men were kneeling shoulder to shoulder along the fourth, knocking in nails and getting in each other's way as much as possible.



THE BRISTOL MONOPLANE.—One of the two British representatives at the Salon.



HOW THE SHOW APPEARS FROM ONE OF THE END GALLERIES.—Perhaps from this picture, more than from any of the others we publish, can be gathered an idea of the magnificence with which the decorative scheme has been carried out.

But work has to be done, so we borrow a couple of chairs and seat ourselves where we can command a good view of all that is going on. My colleague begins to sketch; I begin to write. For a quarter of an hour there is silence. Suddenly a voice behind bawls out, "Que faites-vous là?" and three gold-braided commissionaires march forward and stand above us threateningly. In order to make more sure of the situation, one of them beckons to a gendarme to approach. It is the same trouble again, that of sketching in the Salon. You can take as many photographs as you like, but if you get caught with a sketch-book and a pencil you are looked upon as a foreign spy and get treated accordingly. It happened to me last year, it has happened again this year, and I suppose it will happen next year. First of all, they try to snatch your sketch-book, and this you have to be prepared for. Then the chief-in-command of the capturing squad orders that you be escorted down below to the department where austere officials sit in state to attend, amongst other duties, to erring journalists. The proceedings are so solemn that, by the time you have been lectured for twenty minutes in rapidly-spoken French, you begin to feel that you really have done something very terrible, and you leave the place with a contrite heart until you get outside in the Salon again, where, if you do not find yourself shadowed by the trio who originally caught you, you begin sketching again, only perhaps not quite so openly. By this time it is getting dark, and the lights

are turned on. Still there are no signs of diminution in the activity all around. All are working feverishly to get their stands ready by nine a.m. to-morrow, and, in most cases, they will have to keep on working throughout the night.

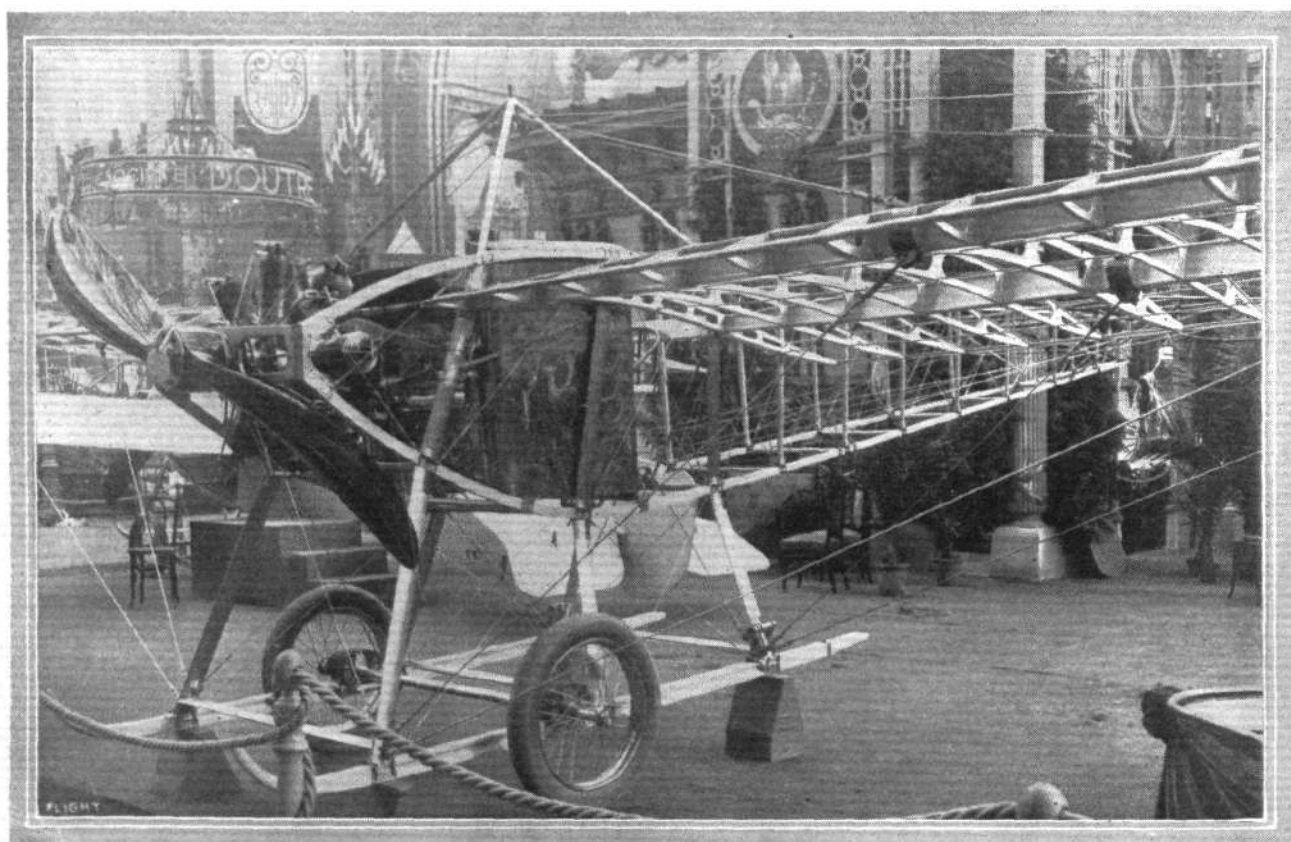
Saturday, October 26th, 1912.

After a complete day of worrying round the Salon, fighting one's way from stand to stand, the main impression left is "What a crowd!" What enthusiasts the French populace are over their beloved aviation. The place filled up soon after lunch-time, and by 4 o'clock the paths between the stands were black with people.

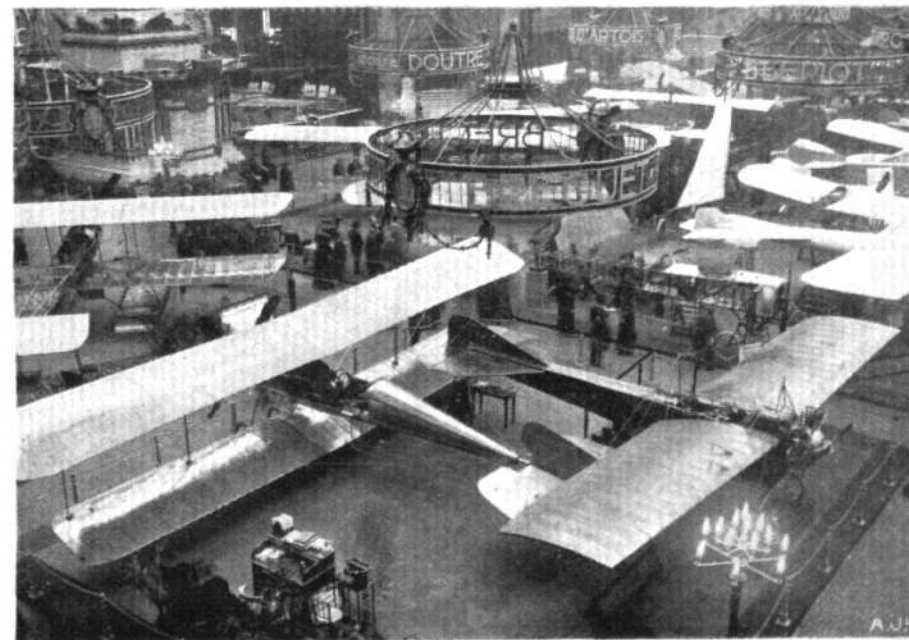
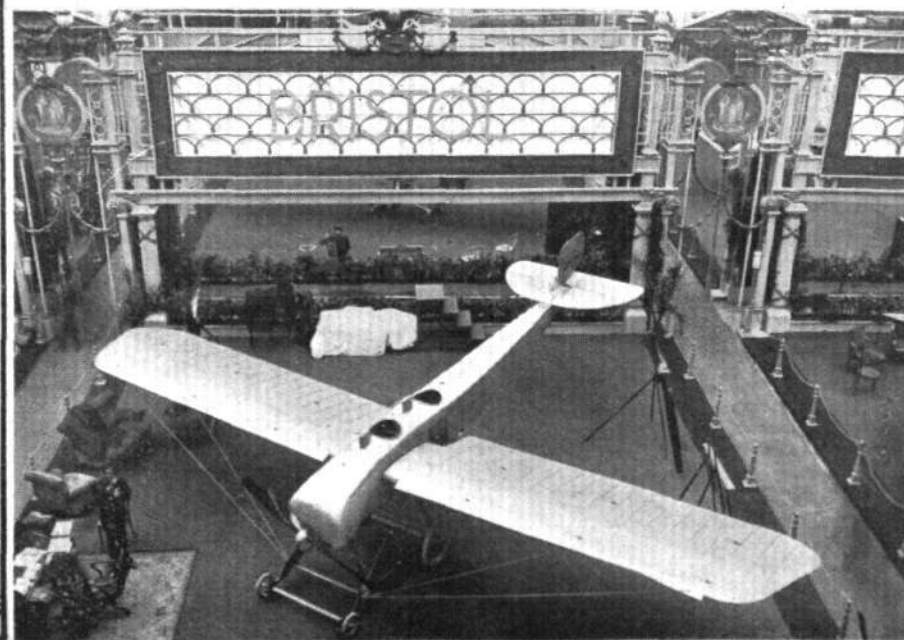
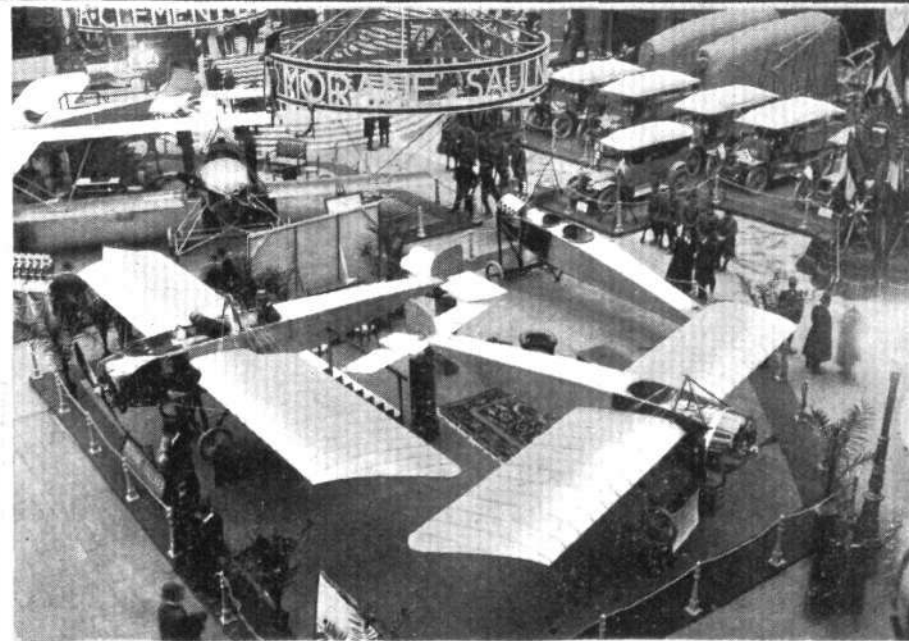
Last year's Salon was somewhat of a revelation for the number of machines displayed. Then there were something like 43 on exhibition. This year the number has sprung up to 77, of which about 27—those machines that are shown in the gallery—belong to the French Army. They, the French Government, have joined in the proceedings very considerably, quite indicative of the keen attention that they pay to matters aeronautic. Not only have they lent such a representative collection of their own "avions," but the French Minister of War has taken a large stand where is displayed a whole battery of Delahaye motor lorries, with bodies specially equipped for carrying large stocks of spare parts. And in what better way could the Government show the people how completely they are watching over their safety in the air? Every stand has an air of progress and prosperity about it, an effect for which



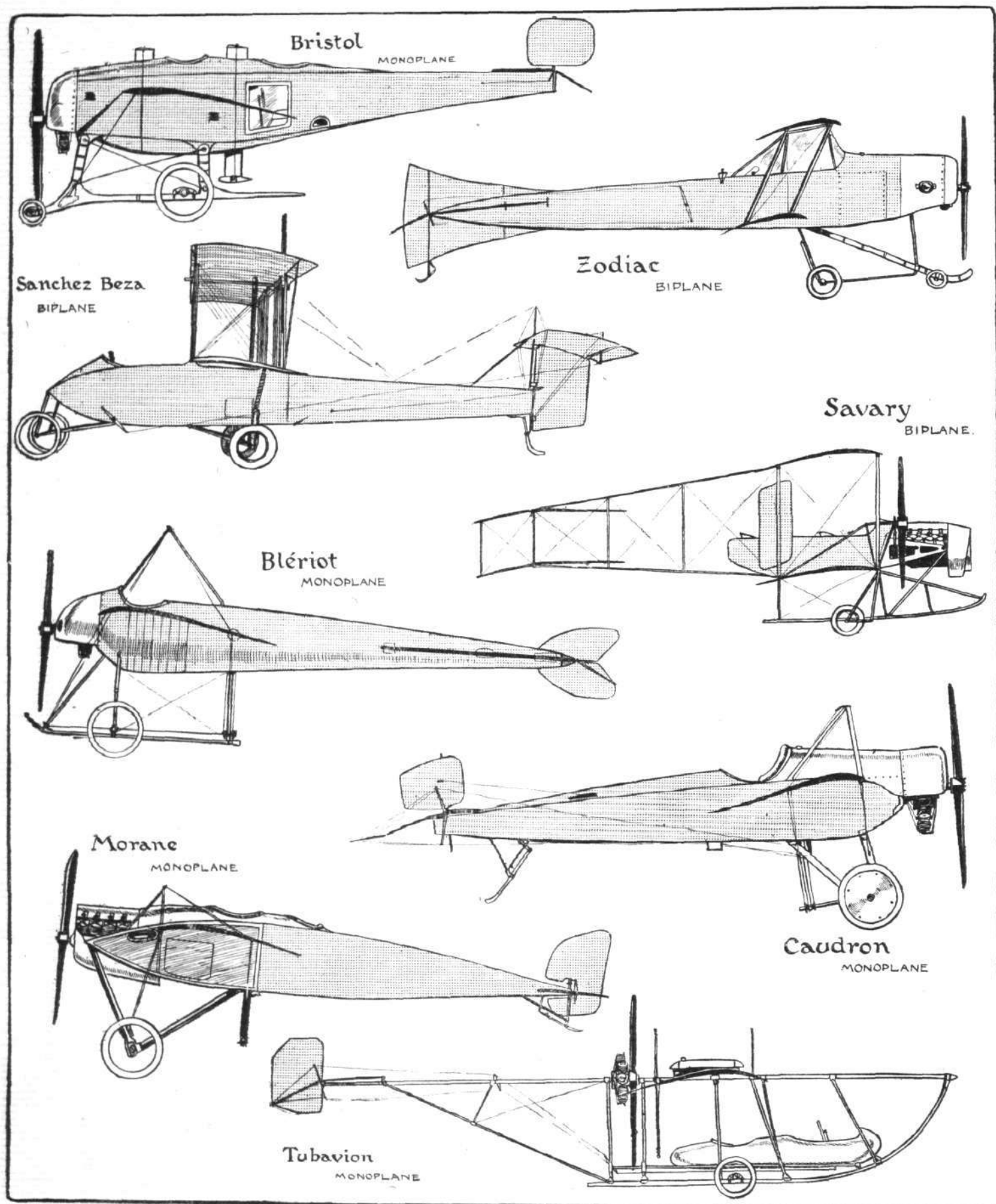
The French Government exhibit.



The beautifully-finished 100-h.p. two-seater monoplane shown in skeleton on the Hanriot stand.



Four representative stands at the Salon—the Blériot, the Morane-Saulnier, the Bristol, and the Breguet-R.E.P.



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SOME PARIS SALON MACHINES.—Reference to these will be found in the text of either this or next week's issue.

the French constructors have to thank an encouraging Government. It must make the hearts of most of our British manufacturers ache when they see how their French confrères are looked after.

From the Salon has vanished the dirigible. Last year there was a complete Astra dirigible suspended from the roof and two or three nacelles were on exhibition. This year the only objects that remind one of the lighter-than-air school are two spherical balloons and two little models of dirigibles—one on the Zodiac, another on the Continental stand.

A newcomer to the Show is the "Aviette." A perfectly hopeless collection of these are foregathered at the Champs Elysées end of the hall.

Hydro-aeroplanes have grown considerably in force since last year. Then there was only one—the Voisin "Canard," a machine which is absent from the Show this year. Now there are no fewer than eleven, seven of them hydro-biplanes, and the rest of the single-decker type. As a class, the hydro-aeroplanes do not seem any too happy, except in the case of the Henry Farman machine and that of the Caudron Brothers. The constructors of the two examples mentioned have each used a type of float which suits, as concerns appearance, the type of machine. In the remainder, especially in the monoplanes, the floats seem unwieldy, and altogether mar an otherwise graceful outline. But, perhaps, this is because we are as yet comparatively unused to them.

Those hydro-machines in which the float and the fuselage are combined in one unit are very little more pleasing, for one immediately feels that such low centres of gravity and head resistance are undesirable. Donnet Lévêque eliminates the centre of gravity trouble by putting their engine up high between the planes.

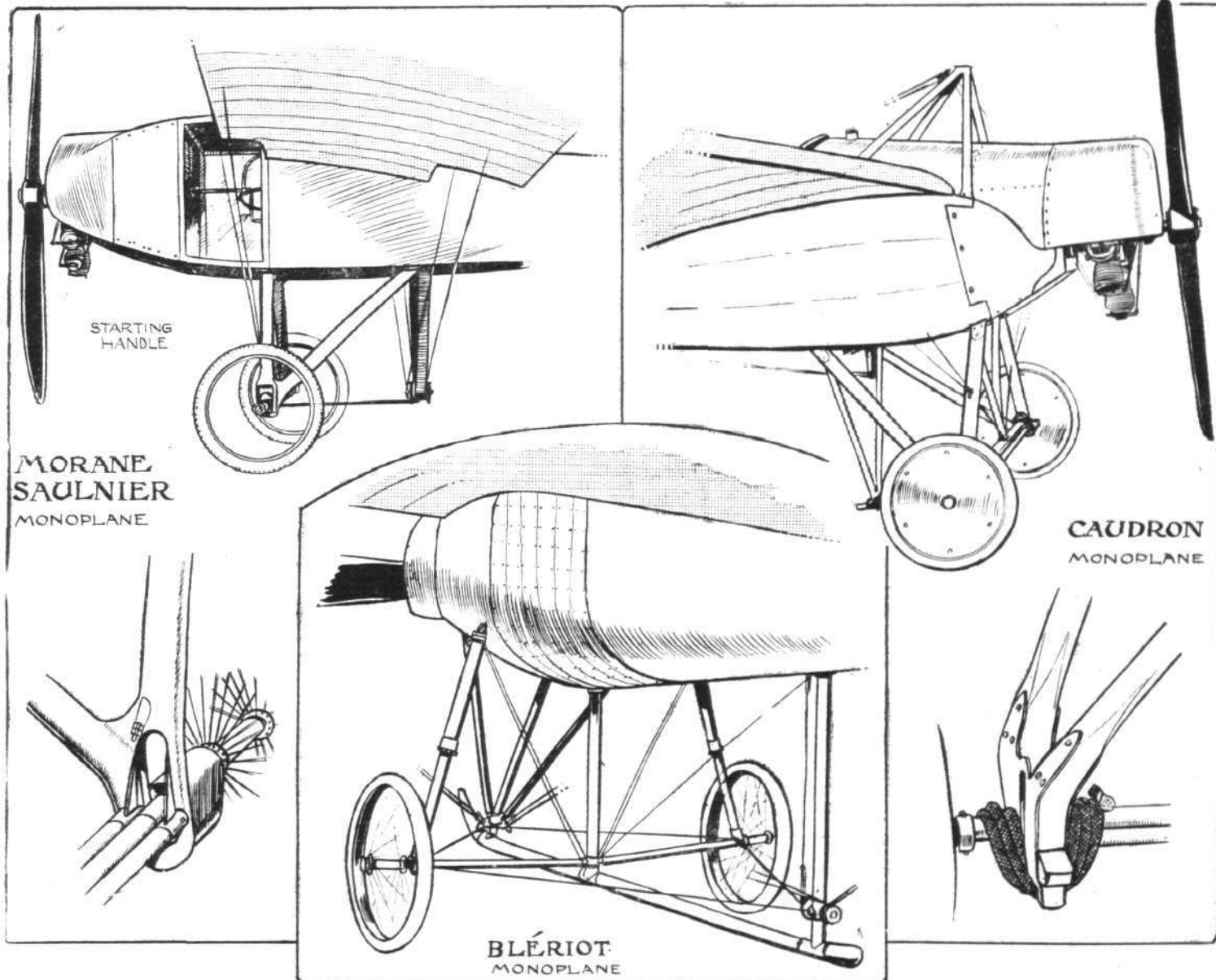
But one other firm, to make their "coque" stable as a water craft, have placed the motor quite low inside the body.

Of the land aeroplanes, monoplanes are, as usual, in preponderance. There are 46 monoplanes as against 20 biplanes. The chief improvements resulting from the past year's work lie in detail design. Here we must certainly give the laurel wreath to the Hanriot firm. Their exhibit is recognised as the "clou" of the Salon.

M. Pagny, their designer, has excelled himself, and the Nieuport firm, with whom he was connected formerly, must be mightily sorry they ever lost his services. They are getting things to a fine point on the Hanriot when they provide a box containing tools and engine parts just behind the pilot's seat; when they so mount the Gnome engine that it can be taken clear of the machine inside of 60 seconds; when wings and stabilizer may be folded back against the fuselage in less than five minutes without interfering with the adjustment; and when the propeller coupling is so designed that it may be urged off its taper by turning a nut between the coupling and front carlingue. Besides these there are innumerable neat points. It is a clever engineer's job throughout, which is more than can be said of some of the other machines on exhibition. Sommer seems to have lost himself entirely in the biplane he is showing this year. His last year's model was promising, but his present one—scarcely!

The Nieuport people, too, have not gone forward. Their present chassis is delicate enough, in all conscience. The pilot of their new model will, if he is not extraordinarily careful, find himself going tent-pegging. A glance at our sketch of their new landing carriage will set this point clear. Their workmanship, however, is superb.

Henry Farman has undoubtedly gone ahead. His present workmanship is a revelation compared with what he turned out even a year since. Whatever some people delight to say about his



SOME LANDING CHASSIS.—In the centre the all-steel chassis of the new 80-h.p. Blériot monoplane. On either side, those of the Morane-Saulnier and Caudron respectively, with detailed pictures showing how the suspension is effected.

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products, there is no doubt about the fact that they are extremely popular with those who fly them. Otherwise, how would there be the demand for them that he has erected such magnificent works to satisfy? He is not showing his monoplane this year. It doesn't give him due credit.

Louis Breguet's main alteration is in the chassis, which now has four wheels instead of three. The Caudron brothers this year are exhibiting their monoplane as well as their hydro-biplane, of which machines, especially the former, they have every reason to be proud.

Deperdussin is specialising in his "monocoque" design, and probably is not far wrong.

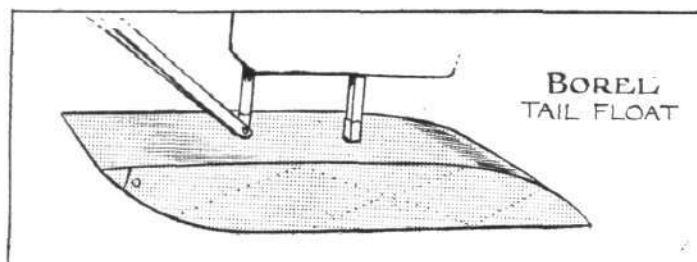
Blériot seems rather restless as regards his landing chassis, albeit very sound as it is. His laminated spring chassis of last year did not survive the Salon. It was extremely neat and pretty, but it wouldn't stand up to severe service. This year he has an altogether new model. It has a "monocoque" body, cleverly constructed of paper, cork, and fabric, and its chassis is of the single skid type, all steel.

Borel, too, has followed the trend of design towards the "monocoque" in his new 80-h.p. racer.

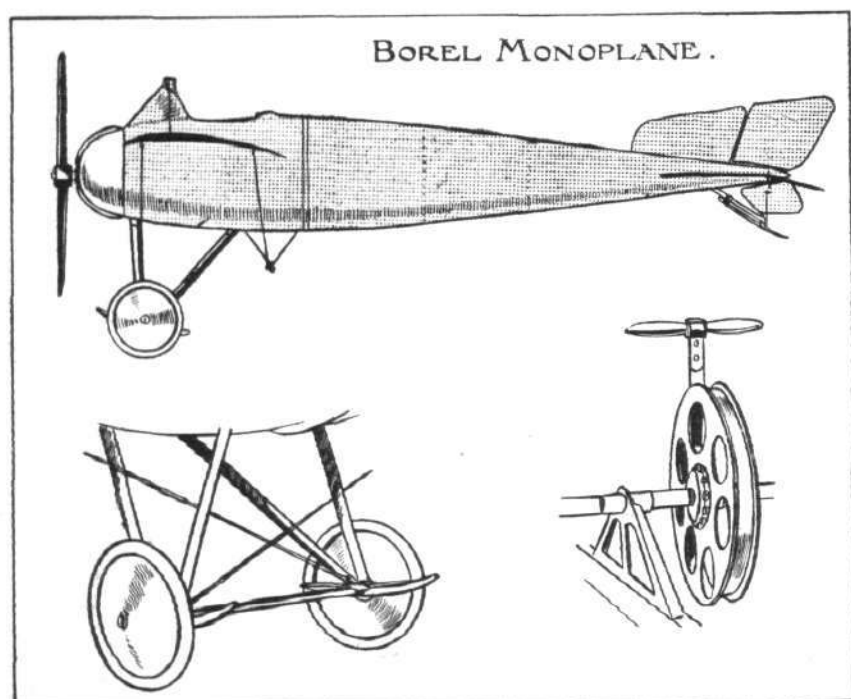
For the rest, the R.E.P., Besson, Tubavion, Vinot, Savary, and Zodiac, they remain, except for finer detail work, practically the same as they were at the last Exhibition.

British manufacturers have, this year, two representatives at the Salon, the enterprising British and Colonial Aeroplane Co., Ltd., and Breguet Aeroplanes, Ltd. The former people are showing

As we have already said, the chassis has undergone an entire change. The new one, as the sketch shows, is of the single skid variety, preferable because of its low head resistance. It is carried out in steel tubing and the wheels are sprung by oleo-pneumatic springs of special design. From the efficiency of a similar spring,

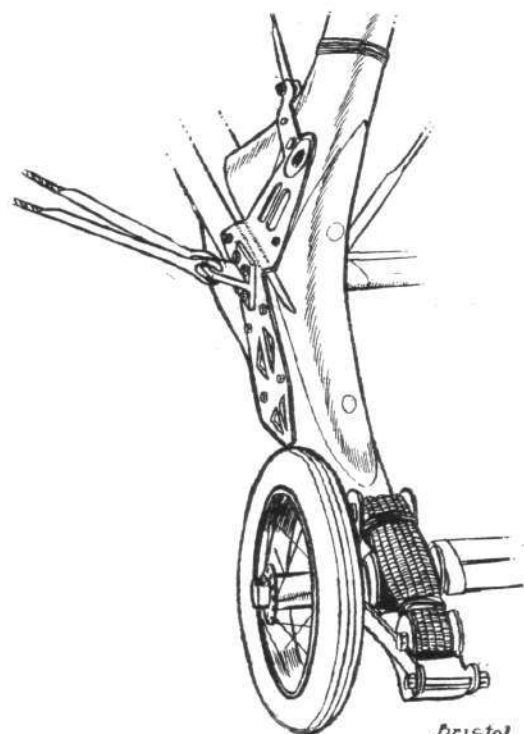


mounted in a stand of its own for demonstration purposes, we should think that no great amount of trouble will be experienced with the suspension. Blériot, too, has, on this machine, made use of the floating tail with hinged elevators. The rudder is shaped like a fish tail, and the levers and cables actuating both are carried inside the fuselage. There is no back skid, for the weight of the tail is carried by the rear end of the main skid. A tripod cabane



BOREL DETAILS.—Above, diagrammatic sketch of the 80-h.p. Borel "monocoque." Below, on the left, shows how the wings are braced from the chassis. The detail on the right is the starting device employed on the Borel hydro.

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Details of one of the front wheels of the Bristol.

Coanda type Bristol monoplanes of the type that figured so well in our British Military Trials, and that have sold so well in Italy and in other countries abroad. The latter have on their stand a biplane such as was flown at Salisbury back in August, but with a different chassis.

Blériot.

LOUIS BLÉRIOT is showing three models and his 50-h.p. Gnome single-seater, his 70-h.p. Gnome tandem two-seater, and a new model that has not yet been tried out.

This new machine is of a particularly clear design. The fuselage is of torpedo form, circular in cross section, and sufficiently wide near the front to seat pilot and passenger side by side.

The construction of the fuselage is extremely interesting. It is of the monocoque type and made on a "forme" in the same manner as a boot is made on a last. Over the "forme" paper is applied and over that pieces of sheet cork.

The whole is well glued up together, then covered with fabric and well pasted to prevent the ingress of water. The thickness when completed of this composite skin of paper, cork and fabric is roughly 6 mm. In front, where greater strength is required to withstand the strains of the rotary 80-h.p., the composite skin gives way to chrome steel sheeting. A Levasseur propeller is used.

above the cockpit supports the wings through strong steel cables when the machine is stationary, and, when in flight, so Blériot has told us, it sometimes come in for a bit of top pressure. The wings are of conventional Blériot design and span 12.25 with a chord dimension of 2 m. 25. The supporting area of this new machine is 25 sq. metres, and its weight, without oil and fuel or passengers, is 375 kilos.

The other two machines on the stand need no description, for those that follow things pretty closely in England know their main characteristics.

There is another object of interest on the stand, and that is the Blériot aeroyacht, a light four-wheeled chassis fitted with a leg-o'-mutton sail which Blériot primarily designed for the amusement of his family when staying at his place at Hadelot plage.

Borel.

BOREL's exhibit of three monoplanes, one of them fitted for water flying, is one of the most interesting in the Show. He has a 50-h.p. Gnome single-seater, a racing monocoque with an 80-h.p. Gnome and the hydro-monoplane equipped with a similar motor. We may put aside the single-seater machine for, except for detail improvements here and there, it is no different from the one that Vedrines

brought so much into the limelight by his magnificent flying during the earlier part of 1911.

The hydro-monoplane, too, is nothing but an enlarged version of the same machine and fitted with floats. But it has some interesting details. The rear float pivots with the rudder and so comes in useful for steering over the water at slow speed. There is a clever starting arrangement so that the passenger can get the motor going without leaving his seat. From a half-speed engine sprocket extends a shaft which terminates in a wheel just between the passenger's knees. Attached to this wheel is a steel band which, if sharply pulled up, sends the engine through to about three-quarters of a revolution, enough, in most cases, to start it off. This wheel, of course, is fitted with a free-wheel attachment.

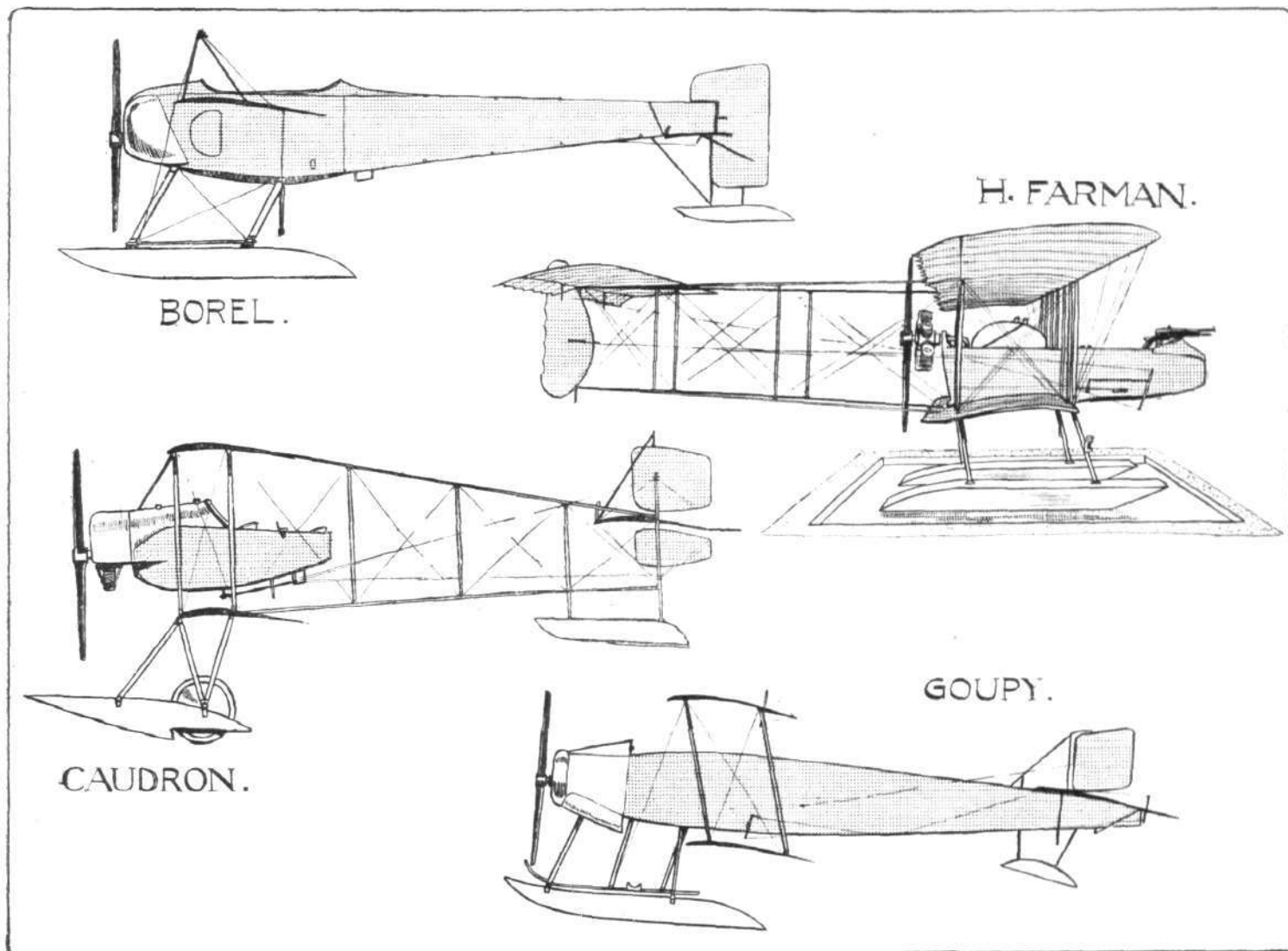
Another interesting point is, that alongside each float are to be provided fittings so that a pair of oars may be carried. Rowlocks are to be fitted, too, so that, getting into port, pilot and passenger

the rudder. Each wing is stayed on the underside by only two cables, a double one running from one side of the chassis to the opposite wing, and one staying the rear-spar and actuating the warping.

The monocoque has not yet flown, and when it does—which will be as soon as the machine can be got away from the Salon—speeds of over 90 miles an hour are expected.

Bristol.

ON this stand is a monoplane similar in almost every particular to the one that carried off £1,000 in prizes at the British Military Aviation Trials at Salisbury Plain. The stand was surrounded with people all day long, and they stand and look as if not being able to credit that a firm of British constructors could turn out such a notably fine example of aeroplane construction. No wonder the Bristol people go to the Paris show when they number amongst their foreign customers such as the Ministers of War of Russia, Germany, Italy, Spain, Turkey, Roumania and Bulgaria.



Some of the hydro-aeroplanes at the Salon.

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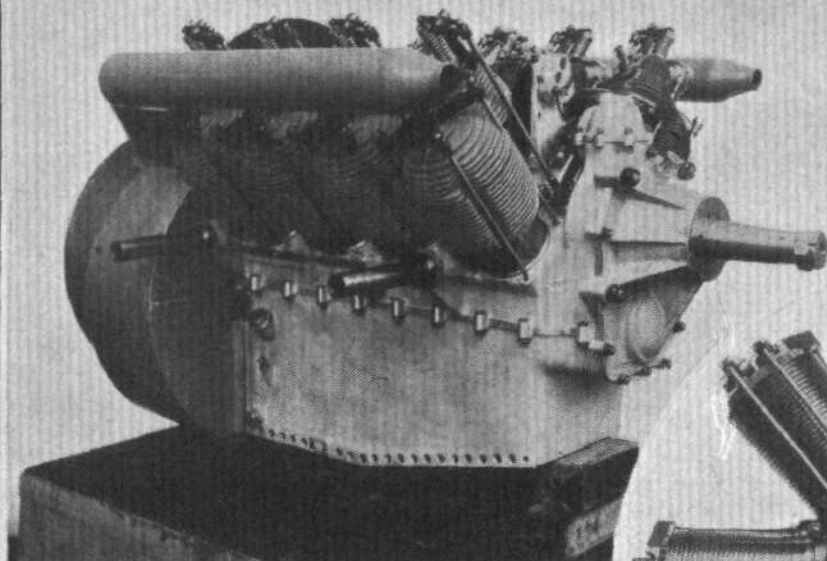
may clamber down out of their seats, sit themselves on the front of the floats and row up to the landing slip.

The third machine of Borel's is the monocoque, inspired probably by Deperdussin's. Its fuselage is built up in a similar manner to that of the latter machine—in three-ply wood. But whereas the Dep. has no framework inside, the shell of the Borel is supported by six longerons, united by circular formers. In front, the 80-h.p. Gnome revolves under a dome, of which a quarter segment is cut away to allow for the sufficient cooling of the motor. Its wings, in which little curvature and little angle of incidence are noticeable, are of the *papillon* type—they are smaller in chord at the root than at the tip. For the chassis, it consists of two V's of streamlined steel tubing, to the base of which the axle uniting the two disc wheels is strapped by elastic bands. The tail, like the two-seater Morane-Saulnier machine, has no fixed stabilizing surface; it merely has elevators rocking about their approximate centres of pressure. A small vertical fin precedes

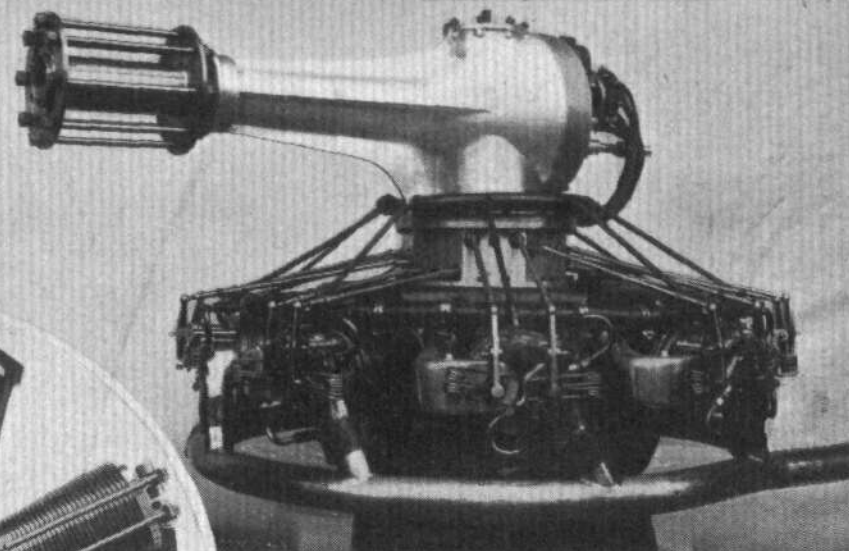
The machine has somewhat the lines of a submarine with wings. The blunt metallic snout over the Gnome motor and the funnel-like upper *cabanes* tend to carry out the impression. Throughout it is well and conscientiously built, in perfect keeping with their usual work.

The fuselage is of square section and built up on the lattice girder principle. Its sides are flat throughout its entire length, but the top and bottom are bellied out by the application of aluminium sheeting. An 80-h.p. Gnome motor protrudes from the front, half covered by an aluminium cowl that keeps oil from the pilot and passenger, and that reduces the head resistance of an otherwise unprotected revolving engine. The chassis is at the same time simple, clean and effective, merely two horizontal skids supporting the body by four strong hollow streamlined struts, with a pair of wheels strapped across them by elastic bands. Tusk-like projections extend in front of the skids and carry another pair of wheels, but quite miniature ones, which protect the propeller from damage. The tail is of conventional

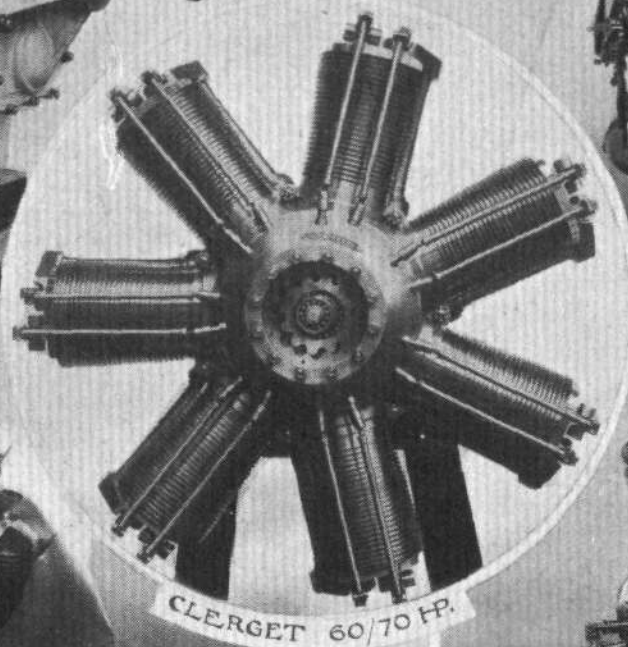
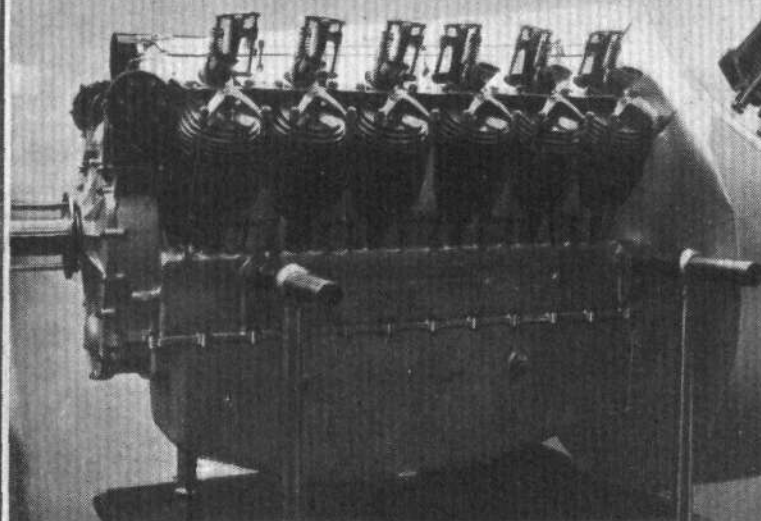
DE DION 80 HP.



CANTON UNNÉ 110 HP.

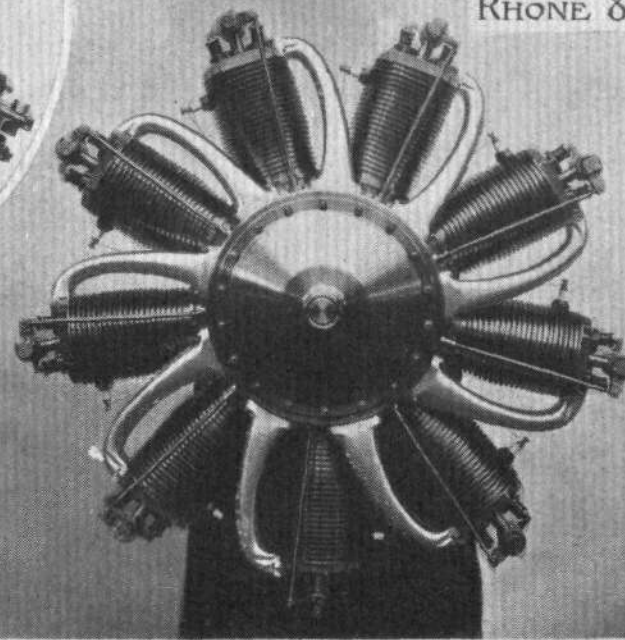


RENAULT

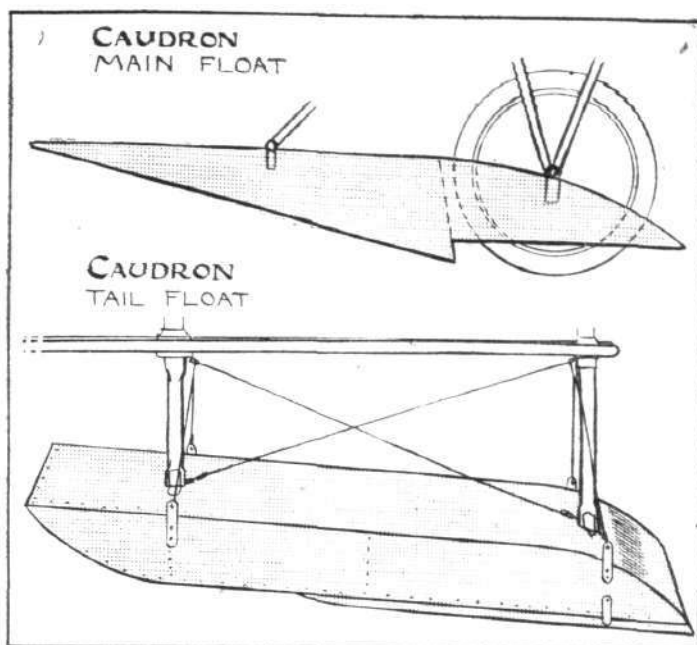


CLERGET 60/70 HP.

RHONE 80 HP.



Some of the new types of motors the Salon has brought forth.



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The Caudron floats.

design. Its disposition may be seen from the little accompanying sketch. Control is arranged in duplicate so that either pilot or passenger, sitting in tandem, may take charge of the machine in flight.

As was announced last week Italy has ordered a batch of twenty of these excellent machines. The latest news here is that the order is more than likely to be considerably increased.

Caudron.

LITTLE need be said of the Caudron exhibit for the monoplane is, except for minor details, exactly the same as the one Ewen has at Hendon, and which has already been described in these columns.

The hydro-biplane shown is of the combined wheel and float type that has been adopted by the French Minister of War for use in their Colonies. The machine itself is the property of the French Government, for it is stamped with their official seal on every part. It has much the same characteristics as the Caudrons we have been used to seeing at Hendon, except that the lower tail outriggers have nothing to do with the chassis but are taken from the lower rear wing boom. The rudders too are larger, there being auxiliary rudders below the tail plane. MM. René and Gaston Caudron hold a patent in their combined landing gear. The essence of it is the arrangement of the wheel to the rear of the step in the float in which position, they claim, the water does not touch it once the machine is in progress over the surface. There is no springing in the chassis at all—the floats are rigid and the only resiliency at the wheels is that provided by the fat pneumatic tyres. The monoplane, as we have already said, is essentially the same except for the changes in the engine cowl and chassis. These are better conveyed by sketches than by words.

Henry and Maurice Farman.

THEIR workmanship is excellent, and their designs too. The brother Maurice has on his stand a biplane similar in nearly every respect to those that are handled in England by the Aircraft Manufacturing Co., Ltd., of Hendon, and flown by Verrier. It only differs in two points, a more elaborate and highly finished nacelle is fitted, presumably because it is Show time, and the rear part of the landing skids are bent downwards to pull the machine up quickly on landing. These two points we illustrate.

Henry Farman's hydro-biplane is easily the prettiest machine of its type in the Salon. It looks good and it is good. And the workmanship throughout would stand examination through a microscope.

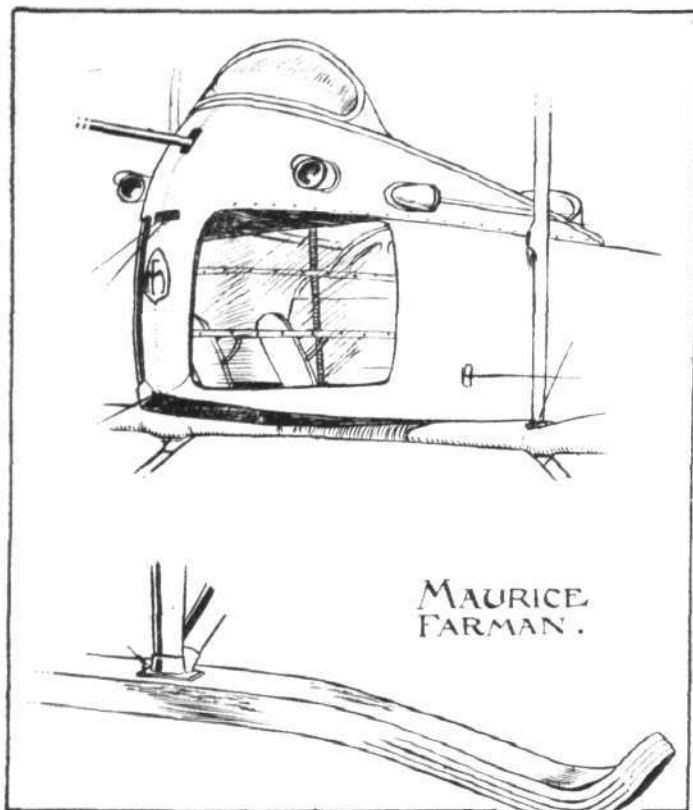
It maintains the same lines as the biplane of his that we reviewed in these columns a week or two ago, but it is considerably smaller, and is fitted with a Gnome engine of only 50-h.p. It is indeed an efficient machine if it succeeds in lifting two persons clear of the water with an engine of such low horse-power. The floats, constructed by Tellier, are just plain narrow pontoons with no step in them, and for them it is claimed that they are considerably more effective in rough seas than those of the wider and shorter variety. Each float is connected to the body of the machine by two simple steel struts, and held rigidly in position by steel bracing. The chassis is not so high and of course considerably stronger than his earlier ones. Two little port and starboard lights are provided, for they are essential, if the machine is going to be kept out on her moorings all night. Inside the body the pilot and passenger can make themselves as comfortable as they could in their own club's smoking-room. All the upholstery is of leather, and a floor covering of thick carpet complete the snug appearance.

Sitting in front, the passenger has a magnificent view all around him. Before him in this particular machine is mounted a *mitrailleuse*. Behind sits the pilot controlling the machine with a lever, not such as were fitted to Farman's a year or two back, but a thoroughly neat one, with all its wire connections tucked away inside its mounting out of the way. On a little dashboard in front of him are all his instruments and a pad on which he can scribble down notes.

Contrary to Henry Farman's early practice, the ailerons, which are of large aspect ratio and fitted to the top plane only, are interconnected, so that when one is pulled down the other one rises.



Part of the Deperdussin stand, showing one of their 80-h.p. Gnome monocoques. The picture gives a good idea of the elaborate scheme of decoration that was adopted at the Salon.



MAURICE FARMAN.

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DETAILS OF THE MAURICE FARMAN.—Above, the new form of nacelle, showing the windows provided to give the pilot a clearer view of what is beneath him; below, shows how the rear ends of the main skids are turned down to form landing-brakes.

Morane Saulnier.

THERE are three models shown. Two of them are two-seaters, and one has an 80-h.p. Gnome installed and the other a 70-h.p. Renault. The third monoplane is a single-seater scouting machine fitted with the ever popular 50-h.p. Gnome. In main outline all three are the same and not a great deal different from the single-seater model, with a rigid chassis that was shown last year. There

is the important difference that the designers have discovered during the past year, the necessity of fitting some form of springing to the wheels, although, perhaps, they might have got over their difficulty quite well by merely fitting pneumatic tyres of such greater diameter than these on last year's rigid chassis. In detail the two-seaters are a great improvement on those shown twelve months back. For instance, the observer on the 80-h.p. Gnome machine has a most complete view both below him, through a hole in the floor, and on either side through windows of triplex glass. In the machine exhibited dummies occupy the pilot's and passengers' seats. The front dummy, supposedly the observer, is posed with a rifle.

Let us briefly run through the main features. The fuselage is a box girder flattening to a horizontal line at the rear which is the axis on which the elevators turn. On the two-seaters there is no fixed stabilizer surface—simply balanced elevators. That part of the machine is kept clear of the ground by a neat little tail skid. There is no change as regards the wings, they retain the notion of having the trailing longer than the leading edge. An improvement in the 80 Gnome 'bus is that the passenger has before him a starting handle so that the machine may be got going without his leaving his seat. He'll probably have to get out once or twice to inject petrol, unless he has a mechanic to do it and then the mechanic might as well, while he were about it, give him a "turn over." Still, at times the starting handle will come in quite useful.

Tubavion.

ALTHOUGH more or less the same in outline as the model shown by Messrs. Ponche and Primard last year, the Tubavion all-metallic monoplane has undergone several minor changes. The monoplane showing at present is a two-seater with a 70-h.p. Gnome installed. Their last year's machine was a single-seater which had its engine, a 45-h.p. Labor Aviation, if we remember correctly, mounted in the underslung body in front of the pilot, whence the drive to the propeller was by shaft and chain. The motor, this year, is back behind the wings and mounted concentrically with the top tube of the fuselage. The skids, almost the only wooden part of the machine, used to run from end to end. They now only extend for the front half.

Messrs. Ponche and Primard do not, for some reason, believe in *soudure autogene*. They prefer to use aluminium sockets to assemble their steel construction work. One of the points in last year's machine was that, while the under surface of the wings was covered with aluminium sheeting, the top surface was left uncovered, allowing such necessary parts as spars to offer untold head resistance. They have changed this by covering the top of the wings with fabric. During the past few months they have had one of their monoplanes flying with a 50-h.p. Gnome motor—almost an identical machine. They obtained a speed of 105 kms. an hour with it. The estimated speed of the two-seater model—it has not yet been tried—is 130 k.p.h. It weighs about 700 lbs.

(To be continued.)

HELMETS.

By ANTHONY WESTLAKE.

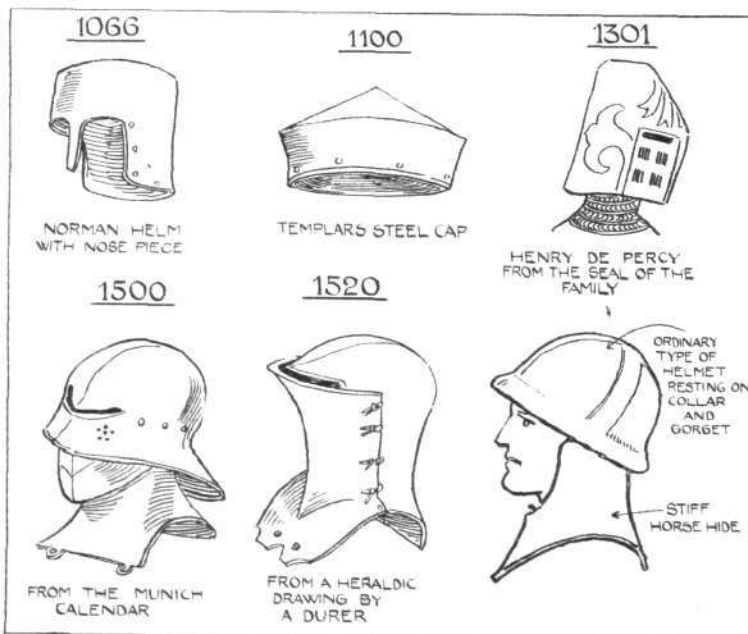
EVERY now and again there appears in FLIGHT an illustration of a new helmet for aviators and it is, I believe, a fact that few pilots now fly without some protection of this kind for their head. So far as I can see, however, these modern devices, while safeguarding the top of the skull, overlook what is the most common cause of death in cases where men have been thrown violently on to their heads. I refer to the fracture of the base of the skull, which is the portion on which the spine and cervical vertebrae rest. This fracture is caused by the weight of the whole body attached to the spine being projected on to the base of the skull by the impact, and it points to the desirability of guarding against the "telescopic" action of the neck by some rigid collar resting on the shoulders.

Those who have paid more than a casual attention to the ancient fighting helmets of the days when men wore armour, will have observed that the more elaborate headpieces worn by those who could afford the best workmanship almost invariably joined the shoulders, and thus entirely relieved the neck of any pressure. I have made a few rough sketches, showing the development of the helmet from the 11th to the 16th centuries, and if I might venture to say so, it seems to me that the modern pilot's helmet is somewhat in the period of the Templar's steel cap of A.D. 1100.

Following on these illustrations of old-time head-gear is a sketch representing a rough idea of my own for applying the principle of the mediæval helmet to the requirements of aviation, which would certainly be prejudiced by any attempt to reproduce the mask, that was such a useful if inelegant protection against the point of an opponent's weapon.

It should be possible to build a light, stiff collar-piece of hide and to make an attachment to the helmet of a simple

and effective kind; at any rate, I put forward the suggestion for what it is worth.



The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 29th October, 1912, when there were present:—Mr. R. W. Wallace, K.C., in the Chair, Mr. Griffith Brewer, Mr. G. B. Cockburn, Capt. Bertram Dickson, R.F.A., Capt. J. D. B. Fulton, R.F.A., Mr. F. K. McClean, Mr. J. T. C. Moore-Brabazon, Mr. Alec Ogilvie, Mr. C. F. Pollock, Com. C. R. Samson, R.N., Mr. A. Mortimer Singer, and the Secretary.

New Members.—The following new members were elected:—Lieut. J. A. Cunningham, R.F.A., John H. W. Davies, Mrs. Finlay, H. R. Fleming, Louis Pierron, Lieut. A. M. Read, and H. W. Styles. Total membership to date 1,457.

Aviators' Certificates.—The following Aviators' Certificates were granted:—

346. Capt. J. H. Gibbon, R.F.A. (Bristol biplane, Bristol School, Brooklands).
347. Lieut. G. A. Parker (3rd Battalion Gloucestershire Regt.), (Bristol biplane, Bristol School, Salisbury Plain).
348. Capt. James Lancaster Lucena, R.F.R.A. (Bristol biplane, Bristol School, Salisbury Plain).
349. Cyril Edgar Foggin, (Blériot monoplane, Eastbourne Aviation School, Eastbourne).
350. Emile Louis Gassler (Blériot monoplane, Eastbourne Aviation School, Eastbourne).
- Subject to the sanction of the Aero Club of Switzerland.
351. Capt. Frederick St. George Tucker (The Worcestershire Regt.) (Deperdussin monoplane, Deperdussin School, Hendon).
352. Capt. Robert Pigot (Rifle Brigade) (Bristol biplane, Bristol School, Brooklands).
353. Tom Grave (Bristol biplane, Bristol School, Brooklands).
354. Capt. John Crosby Halahan (late Royal Dublin Fusiliers) (Grahame-White biplane, Grahame-White School, Hendon).
355. Denys Charles Ware (Deperdussin monoplane, Deperdussin School, Hendon).

The following notice was directed to be issued to all aviators.

The Royal Aero Club, being the sole authority under the provisions of the Fédération Aéronautique Internationale for regulating all matters relating to aeronautics and aviation in the British Empire, hereby issues the following notices and regulations to aviators of all nationalities within its jurisdiction.

1. Flying, to the danger of the public is hereby prohibited. This shall be taken to include:

- (a) Unnecessary flights over towns or thickly populated areas or over places where crowds are temporarily assembled.
- (b) Flying over River Regattas, Race Meetings, Meetings for public games, and sports, except flights specifically arranged for in writing with the promoters of such Regattas, Meetings, &c.

2. Any disregard of the above notices and regulations will render the aviator liable to censure, suspension of certificate and removal from the Competitors' Register.

International Aero Exhibition, Olympia.

The Society of Motor Manufacturers and Traders has decided to organise an International Aero Exhibition at Olympia, under the auspices of the Royal Aero Club, in February, 1913.

In connection with the Exhibition, it is proposed to organise a section for model flying machines, and the Royal Aero Club has decided to offer prizes amounting to £50.

Models may be exhibited in the following classes:—

1. Power driven models (excluding rubber and spring motors). First Prize, £10. Second Prize, £3.

ROYAL FLYING CORPS.

THE following appointment was announced in the *London Gazette* of October 26th:—

Establishments. Royal Flying Corps. Central Flying School.—Brevet Major Hugh M. Trenchard, D.S.O., the Royal Scots Fusiliers, to be an Instructor (graded Squadron Commander), vice Capt. E. B. Loraine, deceased, and to be seconded. Dated October 1st, 1912.

The following were announced in the *London Gazette* of October 30th:—

Special Reserve of Officers. Royal Flying Corps. Military Wing.—Second Lieutenant (on probation) Collins P. Pizey is confirmed in his rank. Lionel Seymour Metford to be Second Lieutenant (on probation). Dated October 30th, 1912.

2. Models driven by any other motive power.

(a) Rising from the ground. Minimum weight, 8 ozs. First Prize, £5. Second Prize, £2. Third Prize, £1.

(b) Launching by hand. Minimum weight, 4 ozs. First Prize, £2.

3. Hydro-Aeroplane models. Minimum weight, 8 oz. First Prize, £5. Second Prize, £2. A tank will be provided at the Exhibition, in which the models will float during the Exhibition.

4. Scale models or part models, embodying new design applicable to full-sized machines. £10 will be awarded in this class at the discretion of the Judges.

5. Model aero motor (excluding rubber and spring motors). Prize, £10.

The model will be judged on a weight per horse-power basis, the ratio not to exceed 8 lbs. per h.p. The weight is to include all accessories with fuel for a minimum run of two minutes, to be taken on a bench test.

The Royal Aero Club will erect suitable stands and provide the necessary attendants. No charge will be made to Exhibitors for space, but an entry fee of 5s. per model will be payable.

Full particulars relating to the Model Section will be issued later. Intending exhibitors are requested to apply to the Secretary of the Royal Aero Club, 166, Piccadilly, W., or to the Secretary of the Kite and Model Aeroplane Association, 27, Victory Road, Wimbledon, S.W., who are assisting the Club in the Model Section.

Aerial Derby Appeal.

The appeal lodged by Mr. T. O. M. Sopwith against his disqualification in the Aerial Derby Race which was held in June last, will be considered by the Stewards of the Royal Aero Club on Tuesday next.

The Stewards of the Club are the Rt. Hon. Earl of Lonsdale, Sir Charles D. Rose, Bart., M.P., Hon. Arthur Stanley, M.P., Admiral of the Fleet the Rt. Hon. Sir Edward Seymour, P.C., G.C.B., O.M., G.C.V.O., and Sir Charles S. Henry, Bart., M.P.

Gordon-Bennett Balloon Race.

The race for the Gordon-Bennett Cup started at Stuttgart on Sunday last, and Mr. J. de Francia, the representative of the Royal Aero Club, descended at Kronstadt, near the Roumanian Frontier, after a journey of 41 hrs.

The International Aero Exhibition, Paris.

In connection with the International Aero Exhibition which takes place in Paris, October 26th–November 10th, 1912, the South-Eastern Railway will issue week-end tickets on November 8th, available to return up to, and including, Tuesday following the date of issue by the short sea routes *via* Dover and Calais, and Folkestone and Boulogne. The week-end tickets are available on the above date by the 10 a.m. train from Charing Cross arriving Paris 5.20 p.m., the 2.20 p.m. reaching Paris at 11.25 p.m., and the 9 p.m. train arriving Paris 5.40 a.m. The return trains from Paris are the 8.25 a.m., 2.30 p.m. and the 9.20 p.m.

The Return Fares are: First Class, £2 18s. 4d.; Second Class, £1 17s. 6d.; and Third Class, £1 10s.

Membership of the Royal Aero Club.

The membership of the Royal Aero Club is being added to each week, and a large number of new members have been elected during the year. The Committee, however, hopes that all members will use their best influence in extending the membership. The subscription of those members elected between now and the end of the year will cover the period ending December 31st, 1913.

166, Piccadilly.

HAROLD E. PERRIN, Secretary.

Gliding at Bristol.

MR. JOSE WEISS visited Bristol on October 24th and gave an interesting lecture on gliding before the Bristol and West of England Aero Club.

The lecturer described a number of his bird-like models of which illustrations were thrown on the screen, and he explained with the aid of blackboard sketches how their wonderful automatic stability was obtained.

Particular interest was shown in the Keith-Weiss experimental "aviette," and at the close of the lecture Messrs. Keith and Weiss explained the wing flapping mechanism in detail.

Mr. Weiss has offered to assist the members in procuring a Weiss type glider to take the place of their biplane glider with which good work has been done but which is rather large for the purpose.

FROM THE BRITISH FLYING GROUNDS.

Brooklands Aerodrome.

ALTHOUGH the weather conditions last week were by no means ideal, there was a good deal of flying, in the course of some of which records were established by Messrs. Raynham (Avro monoplane) and Hawker (Sopwith-Wright biplane) during their respective attempts on all-British machines in the Michelin Competition.

On Monday week Mr. Hawker, on a Sopwith-Wright biplane, was in the air for 2 hours 37 minutes, having a trial trip for the Michelin Competition.

At the Spencer School on Thursday, Mr. Lewis Marcus and Mr. Humphrey Hitchcock (of Montreal) made some excellent flights under Mr. Spencer's supervision.

Mr. Raynham, on the Green-engined Avro, made an excellent attempt for the Michelin Competition, remaining in the air for 7 hours 31½ minutes (record), and Mr. Hawker, on the ABC-engined Sopwith-Wright, made a further attempt, staying up for 8 hours 23 minutes (record). The latter looks like being the successful competitor in this contest, as Thursday of this week was the last day on which an attempt could be made. Amongst the interested spectators was Lord Charles Beresford.

The Bomb-Dropping and Alighting Competition arranged for Saturday afternoon had perforce to be postponed until November 2nd, owing to the heavy rain.

The Speed Handicap on Sunday also had to be postponed until November 3rd, owing to the boisterous wind.

The high character of the instruction obtainable at the flying schools at Brooklands is evidently being appreciated abroad, for there is now a steady stream of foreign officers to Brooklands to learn flying. Lieut. Loutcheff, of the Bulgarian Army, who recently qualified for his pilot's certificate at the Bristol school, where he was instructed throughout by Mr. F. W. Merriam, the manager, and was one of the best pupils who have qualified at the Bristol school, has, on behalf of the Bulgarian Government, made offers to Mr. Merriam (with whose capabilities the lieutenant was much impressed), to Mr. Sabelli (whose brilliant manipulation of the Hanriot monoplane has been the subject of much favourable comment), and to Mr. Knight (whose masterly handling of the Vickers machines has often been remarked), to proceed to the front and assist in the organization of an Air Corps for the purposes of war scouting.

Bristol School.—On Monday, last week, Merriam was testing conditions, then with Lieut. Kitson and Lieut. Boyle, latter then flying alone. Merriam also out with Major Forman and Lieut. Kitson. Capt. Pigot making two good circuits, then another solo, right-hand turns with good landing. Mr. Darracq was out for a solo circuit, but wind too bad for further flying.

Lieut. Empson, a new pupil, was first up in the afternoon with Merriam for a test. Merriam ascending as passenger with Major Forman and Lieut. Kitson. Capt. Pigot going up for two excellent solos and Lieut. Boyle straights. Darkness prevented further flying.

Bendall first made a trial on Tuesday, then out with Lieut. Kitson and Major Forman. Merriam went as passenger with Major Forman and Lieuts. Rodwell and Kitson. Capt. Pigot was twice out for solos, flying circuits. Lieut. Boyle making several straights. Lieut. McClean was then taken by Merriam for tuition, this pupil being also taken by Bendall. School work was impossible in the evening owing to strong wind and rain.

Wednesday the fog delayed commencement. At 10 o'clock Merriam tried conditions, then taking Lieut. Kitson, and as

passenger with Major Forman, and Lieuts. Rodwell and Kitson, all three then flying straights. Capt. Pigot excellent solos, figures of eight, Lieut. Boyle several good circuits with good landings. Bendall starting things off in the evening, taking Mr. Boyle for figures of eight practice, then taking Lieut. Empson. Merriam was out behind Major Forman, Lieuts. Rodwell and Kitson, all three then doing good straights. Capt. Pigot very fine solos, figures of eight, and landing *en vol plané*; this pupil should easily pass the tests for his certificate. Lieut. Boyle out doing left and right-hand turns, flying remarkably well and landing neatly. Lieut. Empson was out with Merriam, and Mr. Darracq carried out fine solo. Fog prevented further work.

After trial by Merriam, Lieut. Boyle was out on Thursday for a flight doing well, Capt. Pigot also ascending and making really good flights with figures of eight. Major Forman and Lieut. Kitson were both out performing well, Merriam taking the latter for further tuition and afterwards Lieut. Empson. Capt. Pigot successfully passed the tests for his ticket, flying well the whole time. Bendall first up in the afternoon, afterwards Lieut. Rodwell doing straights, good landings. Mr. Darracq then out for his *brevet* which he easily accomplished, making second ticket gained that day. Major Forman and Lieut. Kitson straights, Lieut. Boyle figures of eight, darkness putting an end to the work.

On Friday fog too thick for school work first thing, weather cleared later and Bendall up with Lieut. Empson for tuition, Lieut. Boyle going out for straights as also were Major Forman and Lieut. Kitson. Merriam had Lieut. Empson for tuition, Lieut. Rodwell going out for several straights. In the afternoon, Merriam was out first testing, with Lieut. Empson, Major Forman, Lieuts. Boyle, Kitson and Rodwell all out for straights. Bendall was busy taking Lieut. Empson for landing practice.

Bendall was out for a trial on Saturday, then with Major Forman, latter afterwards flying straights. Fog too thick to continue. No flying afterwards, wind too strong.

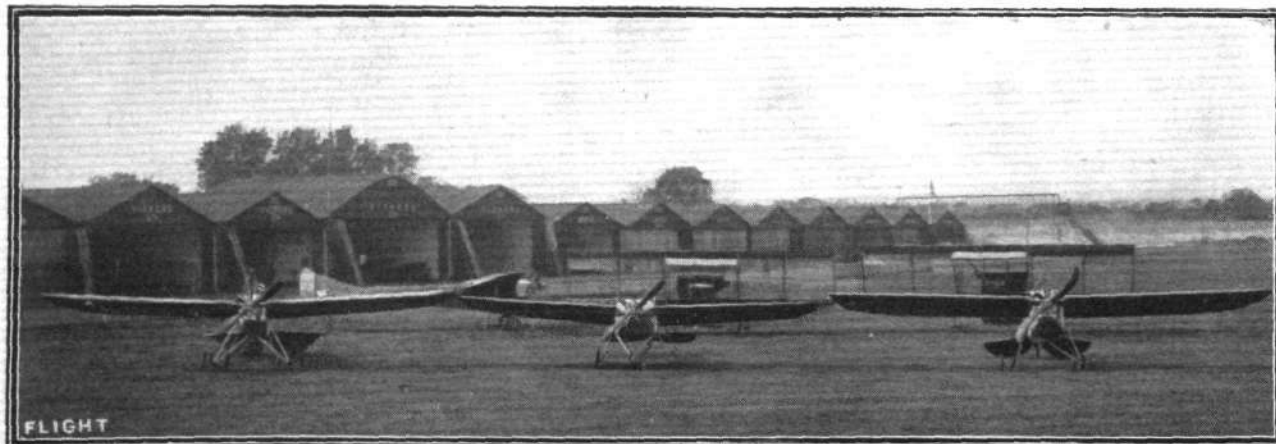
Vickers School.—Monday morning last week, Knight out on No. 3 for test flight then handed over machine to Capt. Stott and Mr. Soames, the former putting in some excellent curves and straights and landing well, the latter contenting himself with useful rolling. Barnwell also out in the morning on No. 5 and No. 6 machines putting in beautiful circuits. In the evening Knight out for test flight on No. 3 followed by Mr. Soames who is getting on rapidly and was doing very good straights.

Knight first out Tuesday morning on No. 3 for test flight then handed machine over to Mr. Soames who did some excellent straight lines and was landing very well.

In the afternoon of Wednesday, Knight on No. 3 machine testing then handed over machine to Capt. Stott and Mr. Soames who both put in some excellent work, the latter doing very good curves and landing the machine well. Mr. Barnwell on No. 5 for test flight but the engine was giving slight trouble.

Thursday morning, Knight on No. 3 for test flight, followed by Capt. Stott, who is making rapid progress now and showing better judgment in all his landings. Mr. Soames was also out and put in many very good straights. In the evening Barnwell was on No. 5 putting in some excellent circuits.

On Friday morning, late, Barnwell out for one of his usual splendid flights on No. 5, putting in very small "eights." He then handed over machine to Mr. J. de la Ferte, who also put in an excellent flight of 20 mins., doing right-hand turns for the first time. Knight then out on the same machine for circuits. In the evening



A trio of Vickers monoplanes at the Vickers Brooklands School.

Barnwell on No. 5 doing any amount of circuits, right and left hand; then Mr. J. de la Ferte on the same machine for a quarter of an hour's flight ended with a beautiful spiral *vol plané*.

No more flying after this date as weather has been terrible.

Eastbourne Aerodrome.

ON Thursday last week, Lieut. Brown was out early on the 28 Anzani, and made several good straights. His first attempt nearly ended in a bad pancake, but by switching on again at the critical moment he just managed to save the smash. The repairs to the Bristol were finished about 11.30, when Mr. Hammond took the machine for a trial flight. In the afternoon Mr. Hammond was out again on the Bristol, and in spite of the frequent showers, he managed to get in quite a number of flights. Lieut. Brown was given his first passenger flight.

On Friday Mr. Hammond was again busy. After giving trips to several passengers he started school work, taking up in turn Messrs. Roberts and Thompson and Lieut. Minchin. Mr. Fowler did his usual stunt round on the Blériot and caused some amusement at the end of it by very nearly running into a dyke when he landed; as it was he only saved himself from doing so by jumping out and clinging to the machine. Mr. Lerwill made a very fine flight on Bristol, during which he climbed to about 800 ft.

Lieut. Bone had the 28 Anzani out on Saturday morning and made several excellent flights. His landings were greatly improved and with a very little more practice he will soon be ready for his certificate. Bad weather set in on Sunday and has continued up to the time of writing.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—School started at 7 a.m. Monday last week, a good morning's work being got in, two pupils passing the necessary tests for their *brevet*. Lieut. F. G. Small started on his first *brevet* test at 7.5 a.m. on No. 5 Grahame-White biplane, and attained a height of 180 to 200 ft. on his first circuits, and after steadily flying his five eights landed within ten yards of the Observers. After a few minutes' rest he commenced his second test, doing some good eights at a height of from 80 to 100 ft., and landing dead on mark agreed by Observers. At 8.25 a.m. Commander M. Yeats Brown next away on same machine, doing circuits and figure eights, after which he also made the necessary flights for *brevet*, doing some good flying and landings, height attained for altitude test about 200 ft. Capt. Halahan flying on same machine at 9 a.m., doing good steady circuits. In evening, 4.45 p.m., Capt. Halahan flying circuits and figure eights on No. 5 biplane. Messrs. Francis and Clarke were taken for passenger flights on same machine by instructor, Mr. L. Turner.

Wednesday morning Capt. Halahan doing circuits on No. 5 Grahame-White biplane. Major Madocks passenger flights on same machine with instructor. In the afternoon Capt. Halahan doing more circuits on No. 5. Major Madocks, Lieut. Birch and Messrs. Clarke and Francis rolling on No. 7.

Thursday, in the morning, Mr. Clarke doing straight flights with instructor.

Major Madocks, Lieut. Birch and Mr. Clarke next morning rolling on No. 7 biplane. In afternoon Capt. Halahan doing figure eights on No. 5. Major Liles straight flights on No. 7, Major Madocks, Lieut. Birch and Messrs. Clarke and Francis rolling on same machine. At 4.20 p.m. Capt. Halahan did necessary flights for *brevet*, making some excellent eights with well banked turns. Height attained during test, 200 ft., this making a third *brevet* taken this week at the Grahame-White School (two Army and one Naval officers) and the eighth during the month.

Owing to the incessant rain on Saturday very little flying was possible at the Aerodrome, but Messrs. Gates and Turner made some 15-minute trials on the following Sunday, Louis Noel made a flight on the 80-h.p. Henry Farman, and P. Verrier also put in a couple of flights on the Maurice Farman, in spite of the high wind. Both pilots had a rough time of it, so were glad to put their machines away and reserve their energies for a more suitable day. As there was, we believe, only one other occasion on which there has been a blank day on a race-meeting date, all concerned have not much cause to grumble.

Blackburn School.—Monday morning, last week, school commenced at 6.30, Dr. Christie doing straight flights, followed by Messrs. Lawrence Spink, Buss and Glew, all of whom have reached the straight flight stage and show perfectly safe command of the controls. All the pupils got in 12 mins. each on the machine. In the evening Messrs. Lawrence Spink, Glew and Buss had 10 mins. each and Dr. Christie 16 mins., all on the 50 Gnome *brevet* machine in charge of Mr. H. Blackburn.

At 9.30 a.m., Tuesday, Mr. Blackburn made a test flight of 8 mins., after which the machine was handed over to Messrs. Glew, Buss and Lawrence Spink for their rolling and short flights, they having 10 mins. practice each. In the evening short flights were again the order for the same trio, 5 mins. each.

Thursday morning, school commenced at 10 o'clock, Messrs. Buss, Glew and Lawrence Spink practising short flights—Glew and Lawrence Spink, 6 mins.; Buss, 12 mins. In the evening, Messrs. Buss, Glew and Lawrence Spink, 4 mins. each.

In the evening, Friday, Messrs. Glew and Buss practised short straights from 4.10 until 5 o'clock.

Blériot School.—Messrs. Sacchi, Welburn, Gratien and Gandillon were all out Monday last week at daybreak, each did one straight flight before the wind rose. M. Gratien rose to about 15 ft. and landed well, and Messrs. Gandillon and Sacchi also did well. Mr. Welburn, however, only just got off the ground. In the afternoon, Messrs. Gandillon and Gratien were out doing straights, and M. Gratien one circuit at about 50 ft.

Wind and rain all day Tuesday, but Messrs. Gandillon, Gratien and Sacchi were out practising all Wednesday afternoon at straights on L.B. 3, and are making good progress.

Thursday, Messrs. Welburn, Sacchi, Gandillon and Gratien were all out doing straights and Messrs. Gandillon and Gratien each did a circuit on L.B. 3.

Friday, Messrs. Welburn, Sacchi, Gandillon, Gratien and Clappen all put in an excellent day's work at straights and circuits. Messrs. Gandillon and Gratien only need a little more practice to enable them to go for their *brevets*, and all the other pupils are coming on well. Fog, wind and rain stopped air work on Saturday.

Deperdussin School.—Tuesday, last week, weather too rough all day for school work, but later in the afternoon in spite of gusty wind Lieut. Gordon Bell took out the new 100-h.p. Gnome 3-seater Military machine and flew with his usual cleverness several circuits, landing splendidly. After re-filling with petrol, he again flew a couple of circuits with passenger. No other work possible for pupils.

Wednesday morning, the Deperdussin School only got out with three machines for pupils, just ready to start practice when down came the fog. So matters delayed until later when weather brightened up. Capt. Tucker on *brevet* machine practising figures of eight, got in quite a good morning's work preparing for ticket. Ware out on same machine, executing some original "Stunts," also got in good flying practice. On No. 3 racer Messrs. Mapplebeck, Brock, Hooper and Whitehouse put in good straights, and showed enormous improvement in getting off and landing. In spite of early fog, all pupils got in a very satisfactory morning's work. In the afternoon advantage was taken of the spell of calm and clear weather by Capt. Tucker, who went for his *brevet*, completing the test in fine style. His banking was particularly good, and by way of showing his confidence in the machine, the Observers noticed him affectionately patting the petrol tank, possibly to coax his mount to the final effort. Other pupils on school machine No. 4. Later, Mr. Ware when landing accidentally switched on again, and before the machine could be stopped, ran into Dep. No. 3, which had just finished *brevet* flights. Did fair amount of damage, and effectively put a stop to further practice on that machine for the day.

Too foggy for work outside Thursday morning, but by 9 o'clock it lifted and left a very fine morning. School taxi 2 was out, and



Cyril Foggin, who has just passed for his *brevet* at Fowler's School, Eastbourne, and the machine on which he had his safety helmet experience recently.

Whitehouse, Capt. Macdonald, Lieut. Mapplebeck, Hooper, Lieut. Brock, all putting in much improved work. Straight flights of short duration were prevalent, and most of these pupils should not be long before going on to a faster machine to practice for *brevet*. Lieut. Gordon Bell took out the Military three-seater, and with a passenger on board and full load of fuel did a fine half-hour's exhibition and test-flying prior to delivering the machine to Farnborough. The machine has 100-h.p. Gnome and is very fast, averaging 66-67 m.p.h. and climbing steadily to 1,400-1,500 ft. In the afternoon, good school work put in by all pupils, and Mr. Denys Ware went for his *brevet*, completing his tests at first try in a very fine manner. His eighties were admirable.

Pouring rain Saturday morning prevented anything doing.

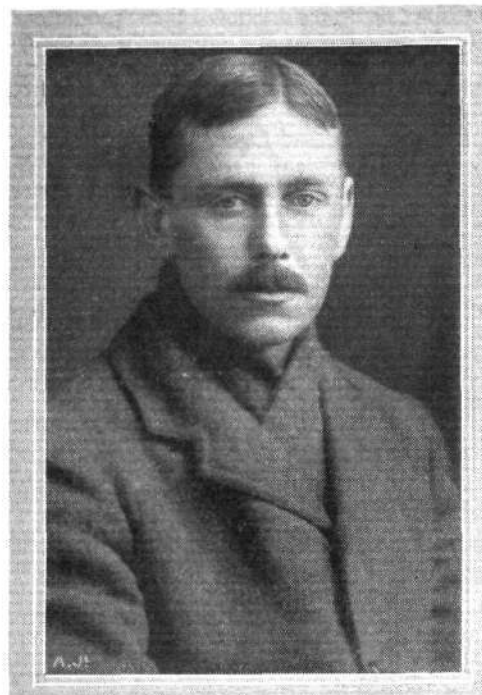
W. H. Ewen School.—Work commenced on Monday, last week, at 6.30 a.m. when Mr. Sydney Pickles, after a test flight on the 35-h.p. Caudron, handed the machine over to Mr. H. H. James, who then went for his *brevet* tests which he passed in a confident and skilful manner, flying most of the time at an altitude of 200 ft., and on both occasions landing on the mark. Lieut. M. W. Noel was also making good progress in rolling. In the evening the pupils were again out under the instruction of M. Baumann on monoplanes Nos. 1 and 2. Mr. Lawford doing good straight flights at 20 ft., making nice landings. Lieut. M. W. Noel rolling on No. 1 monoplane, while Mr. R. S. McGregor received his first instruction on the same machine. Messrs. Warren and Gist flying good straights and half circuits at 20 and 30 ft.

On Wednesday pupils out at 10 a.m. under instruction of M. Baumann on monoplanes 1 and 2. Messrs. L. Russell and M. Zubiaga doing straight rolls and learning to leave the ground. Lieut. M. W. Noel and Mr. R. S. McGregor making good progress in rolling. In the afternoon, M. Baumann getting splendid results from the pupils. Mr. L. Russell and Mr. M. Zubiaga making good straight flights at 15 feet with good landings. Lieut. M. W. Noel and Mr. R. S. McGregor rolling on monoplane No. 1. Messrs. Lawford, Warren and Gist all showing splendid improvement in straight flights and half circuits with good landings. Mr. E. T. Prosser, a new pupil at the school, had his first instruction in controls.

Thursday, a long and continuous day's work commenced at 10 a.m., M. Baumann getting good results from the pupils on monoplanes 1 and 2, Messrs. L. Russell and M. Zubiaga making good straight flights at 15 and 20 ft., while Lieut. M. W. Noel and Mr. R. S. McGregor made good progress hopping. In the afternoon Messrs. L. Russell and M. Zubiaga getting practice in straights with good landings, Lieut. W. M. Noel and Mr. R. S. McGregor hopping, while Mr. E. T. Prosser making progress rolling. Messrs. Lawford and Gist making excellent straight flights and half circuits with good landings.



Commander Alan Montagu Yeats Brown, R.N., who secured his *brevet* at the Grahame-White School at Hendon on October 22nd.



Capt. J. A. Chamier, who last week successfully passed his *brevet* tests on the 35-h.p. Caudron biplane at the W. H. Ewen School at Hendon.

During the afternoon Mr. Pickles flew the 60-h.p. Caudron two-seater biplane from Farnborough, leaving there at 2.45, arriving at Brooklands 16 mins. later, where he descended to meet some old friends. Leaving later for Hendon, where he arrived flying at an altitude of 2,500 ft., he executed a splendid spiral *vol plané*. M. Galey was also out with the 45-h.p. Caudron doing some good exhibition flying and passenger carrying.

On Friday, a glorious day's practice. Messrs. L. Russell and M. Zubiaga making excellent progress in straights at 20 ft. Lieut. M. W. Noel and Messrs. R. S. McGregor and E. T. Prosser improving in rolling. In the afternoon the same pupils continued practice, and, in addition, Lieut. McMullen and Messrs. Lawford, Warren and Gist were all making straight flights and half-circuits with good landings. During the afternoon Mr. Pickles had the 60-h.p. two-seater Caudron out, and after putting up a splendid exhibition he gave passenger flights to all the pupils, greatly adding to their air experience. On Saturday the weather was too stormy for outdoor practice at the school. Mr. N. E. Cowling joined the school.

Jameson and Temple School.—On Monday, last week, Mr. Temple was out making straights on Blériot with tail up. The next morning he was the first out, and in spite of a slight wind, made some excellent straights, following up on Wednesday with straights in fine form.

Salisbury Plain.

Bristol School.—Harrison was first up on Monday, last week, taking Mr. Featherstone, but found weather too bad for further flying. Pizey made a test in the evening, but wind and rain still too bad.

Tuesday, flying was impossible in the morning, but school work was commenced in the afternoon. England taking Lieut. McArthur and Harrison and Mr. Featherstone. Pizey ascended with Mr. Gray, but decided weather was unsuitable for pupils' solos, and rain put a stop to passenger tuition. Mr. Gray, after going up with Mr. Pizey on Wednesday, took charge of controls with the instructor in the passenger's seat, and made a really fine flight. Harrison sitting behind Lieut. McArthur in the same manner. Lieut. McArthur was then up for his first solo as also was Mr. Gray, both doing very well. Capt. Penfold set out for a long trip and got lost in the fog, eventually finding his way back to the sheds. Capt. Lucina then successfully passed the tests for his certificate, flying very well and landing in one case right on the mark. Lieuts. Fox and Ashton were his observers. Harrison brought an end to the morning's work by taking Mr. Featherstone for tuition in the rain that had just commenced. The pupil will be sent for solos at the next opportunity. England was out in the afternoon with Mr. Featherstone for long flight, then taking up Mr. Shekleton. Harrison was again up with Lieuts. McArthur and Shekleton, this pupil being now competent to commence solos. Capt. Penfold, Lieut. McArthur, and Mr. Gray all out for very good solos, all three landing well. Pizey took Mr. Featherstone

in a biplane, and Lieut. Fielding in tandem monoplane. Busted testing Prince Cantacuzene's machine, taking the Prince as passenger. Fog far too thick in the evening for flying.

Thursday morning was the most foggy that has been experienced on the Plain this year. Harrison was out about 11 o'clock, taking Mr. Featherstone for a tuition trip. England was also out for a test of one of the tandem monoplanes which Prince Cantacuzene then took over, and flew beautifully for about 15 mins., landing splendidly. England went over to Upavon with Lieut. McArthur in a tandem monoplane, landing for a short while, and then flying back. Harrison was up in another monoplane with Capt. Penfold, flying several wide circuits, Busted taking Prince Cantacuzene for a trip in his own 80-h.p. Bristol.

England tested the conditions in the evening, ascending in one of tandem monoplanes with Prince Cantacuzene as passenger, Pizey ascending in side-by-side machine and giving tuition flight to Lieut. Fielding, who then went up for a splendid flight by himself, rising to 1,000 ft. and landing perfectly. Harrison had Lieut. Shekleton for tuition, and this pupil will now start solo work. Pizey was out with Mr. Featherstone, and this pupil should also be able to commence solos at the next favourable opportunity. Capt. Kunhardt, Penfold and Williams, and Lieuts. McArthur and Gray all out for good solos on biplanes, flying very well. Lieut. Fielding again put up a good show on the side-by-side, reaching 1,200 ft. during the flight he made of about half an hour, landing well.

Prince Cantacuzene flew over to the Cavalry School, landing, and having tea at the officers' mess, and after watching the finish of the tournament, to which all the pupils and staff of the Bristol school had been invited, flew back to the hangars.

Friday morning was still exceptionally foggy and it was fairly late when Pizey was able to ascend for a trial. Capt. Kunhardt, Williams, Penfold and Mr. Gray were all out practising figures of eight and performing quite well.

Prince Cantacuzene set off for a cross-country flight in one of the

tandems, being altogether 45 mins. in the air. Lieut. McArthur managed to satisfactorily pass the tests for the first half of his certificate, but had engine trouble and had to descend before completion of second half.

Pizey made a test of conditions in tandem monoplane in the afternoon, afterwards taking Miss Kunhardt for a joy ride. Harrison made a test of a recently erected biplane. Lieut. Fielding carried out an excellent solo on side-by-side monoplane, then making a second trip, and getting lost in fog, landed near Fargo. Pizey flew with England to search for Lieut. Fielding, eventually locating his landing place.

Harrison out with Mr. Featherstone for landing practice, England giving similar instruction to Lieut. Shekleton. Prince Cantacuzene performing well on tandem monoplane having to land through running short of petrol. England with Lieut. Shekleton flew over with replenishments, both flying back. Prince Cantacuzene during the short time he has been at the school, has completely mastered the Bristol monoplane, and for the past week or so has shown himself to be a pilot of no mean ability. The Prince has recently purchased one of the new 80-h.p. monoplanes which he will take back to his native country with him.

Capt. Penfold made a very clever flight in the gusty weather, reaching a good height, whilst Capt. Kunhardt and Lieut. McArthur each out for good solos, practising figures of eight and landings on the mark. Wind and rain completely baffled attempts at flying in the evening.

Rain and fog prevented flying all day Saturday and work was confined to the hangars.

Royal Flying Corps.—Mainly on account of the wretched weather, Monday evening saw the first flying which had taken place for a week, Lieut. Fox taking out the biplane 203 in a stiff wind. The Maurice Farman and biplane 205 have been overhauled. A Nieuport monoplane with 28-h.p. 2-cyl. Nieuport engine is now being erected for use by the officers here.

BRITISH NOTES

British Duration Records.

FLYING for the British Michelin Cup No. 1 on the 24th ult., at Brooklands, on the Sopwith-Wright biplane fitted with a 40-50-h.p. A.B.C. engine, Mr. H. G. Hawker made a non-stop trip of 8 hrs. 23 mins., the flight only being terminated by the gathering darkness. Subject to the confirmation of the Royal Aero Club Committee, this performance secured the Cup to Mr. Hawker for this year as his time was unbeaten when the competition closed on Thursday last. A Bosch magneto was fitted, and the A.B.C. engine ran without a single misfire. Shell spirit was used and Wakefield's Castrol "R" was depended on for lubricant. Mr. Hawker started at 9.15 a.m. while Mr. F. P. Raynham was still going steadily round and round on the Avro enclosed military biplane, fitted with 60-h.p. Green engine. Raynham started at daybreak and remained in the air for 7 hrs. 31½ mins., the flight being terminated by the lubricant giving out. Last year's record for the cup was 5 hrs. 15 mins. by Col. Cody.

New Flying Ground for Scotland.

IT is not unlikely that Scotland will shortly boast another aerodrome and possibly an aeroplane factory as well. Mr. W. H. Ewen has been prospecting for an aerodrome in the neighbourhood of Glasgow, as although Lanark has many advantages it is too far from Glasgow's commercial centre to be convenient.

The Week-End at Hendon.

So successful have the week-end meetings at the London Aerodrome, Hendon, proved, that the Grahame-White Aviation Co., Ltd., have decided to continue them every Saturday and Sunday afternoon from 2.30 p.m. till dusk, until further notice. The special item on the programme for this afternoon (Saturday) is a Grand Speed Handicap, to be run off in two heats and a final, interspersed with exhibition and passenger flights.

Mr. Hamel at Stoke.

ON Thursday week Mr. Hamel gave three exhibition flights on his Blériot monoplane at Stoke. The flights were not of a very long duration, but in one Mr. Hamel went up to a height of 3,300 ft. They were watched by a crowd of between 3,000 and 4,000 persons, and Mr. Hamel was accorded a civic reception.

A Frenchman on the Dunne Machine.

AN interested visitor at Amesbury, Salisbury Plain, the other day, was M. Montmain, the school pilot of the French Astra Co. He made five flights on the Dunne biplane, sometimes in the calm, but once when the wind was blowing 17 miles an hour, this latter being a semi-circular flight to a predetermined spot, while the other trials were all circular, and made at a height of 300 ft. After this experience, M. Montmain stated that the machine was extraordinarily

OF THE WEEK.

easy to control, remarkably stable, a very good glider, and landed quite easily. In spite of a great difference between this machine and the one he was in the habit of handling, M. Montmain found no difficulty in piloting it at his first attempt.

An Opportunity to Join the Royal Aero Club.

THE present time provides a particularly good opportunity to join the Royal Aero Club, as the payment of one year's subscription gives the full advantages of membership up to December 31st, 1913. Full particulars can be obtained from the secretary, Mr. Harold E. Perrin, 166, Piccadilly, to whom applications should be sent.



The Martin-Handasyde monoplane, with Petre in charge, over Brooklands. In the distance is Sopwith's biplane, with Hawker up, having a try for the Michelin Cup.

The New Naval Hydro-Aeroplane.

LAST week saw the British Navy's latest acquisitions—the little Donnet Leveque flying boat and also the new Short 140-h.p. double-engined monoplane, being tested over the River Medway in the neighbourhood of Sheerness.

Guy Fawkes Day at Hendon.

GUY FAWKES day will be kept in truly up-to-date style at the London Aerodrome, Hendon, on Tuesday next, and those who wish to see something of what the modern aeroplane can do, should make a point of visiting the aerodrome on the evening of that day. The programme will be somewhat similar to that of the First Illuminated Night Flying Fête, and will conclude with the destruction of a fort by fireballs thrown down from the aeroplanes. It is anticipated that at least ten machines will be taking part, and many of these will be lit up with electric lights, while the grounds will also be prettily illuminated with coloured lanterns and fairy lights, with searchlights at prominent points to guide the competitors.

The Aerial League Dance.

A VERY great success was the first Aerial League Dance held at Richmond last week, thanks to the work of the Committee and the splendid organisation of Mr. A. Wallace Barr, the Hon. Secretary of the local branch of the League. Among those present were a large number of aviators and others concerned with flying, including Mrs. C. de Beauvoir Stocks, Messrs. B. C. Hicks, Seymour Metford, Fred May, Bernard Isaac, A. Wallace Barr, E. Keith Davies, Fowler, &c. It is announced that further dances will be arranged shortly when a larger hall will be taken so as to accommodate all those who wish to take part, many of whom had to be disappointed on this first occasion, so popular did the function prove.

The New Irish Flying School.

PROGRESS is being made with the flying school for Ireland which is being organised by Mr. H. G. Loder, who has decided upon

a piece of ground near Blessington, co. Wicklow, as the *locale* of the aerodrome. Two Farman biplanes have already arrived, and it is hoped to make a practical start with tuition work in about a month's time. Full particulars can be obtained from 25, Bachelor's Walk, Dublin.

The Clarke Automatic Control.

READERS of FLIGHT will learn with considerable interest that Mr. Clarke has already sold one of his automatic control devices abroad for a considerable sum, and has also managed to interest some of the important British firms in its use. In this work, we understand, Mr. Clarke is prepared to entertain the co-operation of anyone who might be sufficiently interested and otherwise qualified to assist in the development of his work, to which end it is merely necessary to communicate personally with him at the Crown Works, Kingston-on-Thames.

Valkyries at Shorncliffe.

WITH the object of using them for experimental purposes, the Valkyrie monoplanes, which were presented to the Navy by Mr. H. Barber some time ago, have been sent to Shorncliffe Camp.

Ascot Boys get a Balloon Lesson.

BOYS at the Sunningdale School, Ascot, were in luck one day last week, for a military balloon dropped in their football ground, and the boys so plied the pilot, Lieut. Boothby, R.N., with questions that he had to give them an impromptu lecture on military ballooning, map reading, &c.

British Deperdussin Extending.

IN consequence of the rapid extension of their business, the British Deperdussin Aeroplane Company, Ltd., have been compelled to take more commodious offices, and the new address of the registered office of the Company is now 39, Victoria Street, Westminster, S.W.

SOVEREIGNTY OVER THE AIR.

SIR H. ERLE RICHARDS, the Chichele Professor of International Law and Diplomacy at Oxford delivered a lecture in the Hall of All Souls College on October 28th, under the above title. Professor RICHARDS, after pointing out that the subject was one of much importance and some urgency, said that the International Conference which met at Paris had adjourned without coming to any definite conclusion. Dealing with the question of whether States had a sovereignty over the air or what their rights were, he held that the governing principle was that States were entitled to all those rights which were necessary for the preservation and protection of their territories, and he contended that the right of absolute control over the air was essential for this purpose. The administration of a State could not be carried on if air vessels could hover over the territory at their pleasure and deposit cargo or passengers unobserved. There were other difficulties, in that the defensive works of the State would be exposed to view, and there were questions as to the rights of belligerents in the air space above neutral States if that space was to be free to all. The usage of States was consistent only with the principle that they had sovereignty of the air. He gave instances of legislation dealing with the use of the air, and said that in no single case had the assertions of jurisdiction by States ever been challenged. He then turned to municipal law, and pointed out that by the law of the majority of civilised countries the owners of land held up to the heavens, and this, of course, implied that States asserted jurisdiction to an equal extent. Dealing with the contention that the air was free, he said it rested on no legal basis whatever. There was no authority for it, and the utmost that could be claimed for it was that it followed the analogy of the high seas, but he pointed out that the analogy was altogether false, for no user of the high seas could affect the dominion of a State nor the safety of its subjects. It has been suggested that the air was free, subject to some limited control, but this he held to be an impracticable suggestion, for it was impossible to define the point at which that control was to stop. He contended that absolute sovereignty was essential for the subjacent State. The admission of this principle would not interfere with the liberty of aerial communication any more than the fact that States owning the land interfered with communication by land. He then referred to the discussions which had taken place on the Continent, and pointed out that the doctrine of air freedom would do away with the protection of neutral territories, and enable belligerents to pass across them at will. He trusted he had convinced them that whether the matter be treated as one of legal principle or as one of practice, it was alike necessary to recognise the absolute sovereignty in the air space above territories. With regard to the theory that the air was free, that theory was new; it had never been accepted as a principle of international law, and it

would appear on the present occasion to be put forward rather as an expression of a generous hope than as a statement of any rule which could be derived from existing law. It found no support in any analogy which could be drawn from the law of nations, or in any juridical principle which had as yet been recognised among States. The suggested analogies of the high seas or of territorial waters had no bearing on the question of the air about State territories, and could never have any bearing on it because of the distinctions which existed between air and sea in their relation to the earth. The practice of States was wholly opposed to the existence of any such idea, and municipal law recognised private ownership in the air to the fullest extent. Next, if the claim to air freedom be judged merely as a rule of convenience put forward for the acceptance of nations on a point which was not covered by existing law or principle, it must equally fail because it was not practicable. The discussions to which reference had been made had shown that such a rule was admittedly impossible if applied in its entirety, and those who advocated it had been forced to concede that it could stand only subject to wide restrictions and reservations imposed for the security of subjacent States. It must be restricted, they said, by the rights of the States below to legislate for their security, but they had not attempted to define with any approach to exactness the limits to which that legislation was to be subjected, and it did not seem possible that any definition could ever be successfully framed that would work in practice. States must be the judges of the necessary safeguards they imposed for their protection; there could be no hope of peace if other States were to have the right to challenge their decision on such a point. Moreover, in time of war any right, or so-called right, of free navigation of the air must be subjected to the same rules which gave protection to neutral territory, and the Sovereign of the neutral State must be treated as Sovereign of the air above it in all that concerned the operations of belligerents. This was inconsistent with any idea of the freedom of the air. If they turned, on the other hand, to the principle of State sovereignty over the air they found that it required no convention to make it effective, but that it was the natural outcome of existing international law. It required no reservations or restrictions; it was simple in theory; it could present no difficulties in practice; it would not prevent the development of air transit any more than sovereignty of the earth had prevented the development of land transit. It was a result which followed inevitably from the admitted right of States to exercise sovereign powers to such extent as was necessary for the preservation and security of their territories, and as long as by the force of its attraction the earth held in its bonds the vessels which passed through the air above it, so long that air, or the space which it occupied, must be treated as an inseparable part of the territories beneath.

FOREIGN AVIATION NEWS.

Badges for French Military Aviators.

THE French Minister of War has now approved the badges which will be worn by officers and men of the Aeronautic Corps. The badge consists of a pair of outstretched wings, crossed by an anchor and ball in the case of those connected with aerostation *i.e.*, dirigibles and balloons and by a two bladed propeller for those connected with aviation *i.e.* aeroplanes. The collar badge consists of one wing with a steering wheel for dirigible pilots, one wing and a five-pointed star for aeroplane pilots, a wing and cog wheel for engineers of dirigibles. Mechanics will have a gear wheel as their badge.

More French Soldiers to be Trained.

FOR the second time the French Minister of War has approved the selection of a large number of non-commissioned officers and men from various regiments to undergo training in military aeronautics. This second list contains sixty names, and the men will be sent in parties of twenty to the various French military schools for their training.

The Pommery Cup Competition.

Brindejonc des Moulinas on his Morane-Saulnier monoplane started from Villacoublay on the 25th, with the intention of flying to Berlin, but he was brought down at Mezieres. Jules Vedrines has just entered for the Competition, in which he has already won two of the prizes.

Military Work on M. Farman's.

ON Monday, Lieut. Vaudein went from Buc to Epernay on his M. Farman biplane, and on the 23rd, Lieuts. Noe and Van Duyck flew from Buc to Etampes to visit the school there, returning later in the evening.

Honour for Injured Officer.

LIEUT. FAUCOMPRE, a French army pilot who was injured some time ago through making an awkward landing to avoid the crowd which got in the way of his machine, has been nominated as a Chevalier of the Legion of Honour.

New Landing Grounds in France.

THE Association Générale Aeronautique has arranged with the municipality at Sables d'Olonne for the use of the new race course as a flying ground, and at Chantillon-sur-Seine, 11,000 francs have been subscribed for the purpose of making an aerodrome.

Farman Frères in the Air.

ON Monday Maurice Farman took his brother Dick as a passenger on his machine for a trip from Buc to Dreux, returning to Buc in the evening.

A New French Monoplane.

SOME good flying has been done at St. Cere recently by Arondel on a monoplane designed by himself and fitted with a 50-h.p. Anzani motor. On Monday he was up to a height of 1,500 metres, while on the 23rd, at Castelsarrasin, during a flight he released a number of pigeons belonging to various homing clubs in the neighbourhood.

Some Bulgarian Sommer Pilots.

TWO of the Bulgarian officers, Mitieff and Stoyanoff, who have been taught at the Sommer school at Mourmelon have left for the

seat of war with their biplanes, and Burri, who will shortly follow them, on Monday flew over Mourmelon, Rheims, Chalons, Vouziers and back.

Good Flight on a R.E.P.

By way of training for his superior brevet, Sergeant Bourkadam made a flight of 1 hr. 45 mins. on his R.E.P. at the Buc aerodrome on Monday.

High Flying on Maurice Farman Biplane.

AT Biarritz, on Sunday, Bernard, accompanied by a passenger during a flight which lasted 1 hr. 40 min., climbed to a height of 2,700 metres on his Maurice Farman biplane with Salmson-Canton Unné motor and Chauviere propeller.

Count Tholozan after Height Record.

AT Issy, on Saturday, Comte de Lareinty Tholozan, on a Blériot monoplane, on which he had flown over from Etampes on the previous day, made an attempt to beat the height record. He, however, only got up to 4,000 metres, and descended after 20 mins.

Guillaux over Salon.

ON Sunday morning a monoplane appeared above the Grand Palais, and, after circling several times, steered off along the Place de la Concorde, the Champs Elysees, Passy, and so returned to Issy. It turned out to be the Clement-Bayard machine, piloted by Guillaux.

Flying at Ghent.

IN connection with the International Exhibition which is to be held at Ghent from April to September, arrangements are being made for the laying out of an aerodrome and the putting up of hangars so that they may be used by aeroplanes and balloons. It is hoped several flying meetings will be held.

South German Circuit.

THE awards in the South German Circuit Competition have now been issued by the R.A.C. of Bavaria. Among the civil competitors Hirth was placed first and received £625, Baierlin, second, and Lindpaintner, third. Among the military competitors Lieut. Vierling was first, and awarded Prince George's prize; Lieut. Hailer second, the Bavarian Minister of War's prize, and Lieut. Von Buttlar, third.

German Hydro-Aeroplane Meeting.

THREE hydro-aeroplanes took part in competitions at Putzig on October 25th, when all the events were won by Thelen on an Albatross, which was eventually purchased by the Government. In the speed test he covered the ten kilometres in 12 mins. 12 secs. The other competitors were Fischer (Aviatik) and Gorrissen (Ago).

German Fund for Disabled Pilots.

IT is announced from Berlin that the sum of £5,000 has been sent by an anonymous donor to the Kaiser to start a fund, which will be known as the Emperor William Fund for aviators, and which will be employed for the benefit of military aviators and aeronauts who meet with accidents, and their dependents.

An Italian Naval Officer's Flight.

ON the 24th ult. an Italian naval officer, started from Juan les Pins on a hydro-aeroplane to fly to his station at Spezzia, but after covering about 200 kiloms, he was forced to stop suddenly. He alighted on the sea quite close to the coast and assistance was sent from an Italian warship.

Flight "Man-Birds."—III.

—From the original by Frank M. Williamson.



THE BULL FINCH.

A Russian Military Certificate.

FOLLOWING the example of other countries, arrangements have now been made in Russia to issue a "superior" certificate specially intended for military pilots, and although we have not details of the requirements, it is understood that they are by no means easy. The first officers to qualify were Lieuts. Popoff, Balaboucha and Ivkoff, all on Blériot-Gnome monoplanes.

Russian Princess as Pilot.

AT the flying ground near St. Petersburg on Monday, Princess Shakhowsky, who obtained her certificate a short time ago, made a flight of ten minutes on her Wright machine, accompanied by a lady passenger.

Curtiss Machines to have Automatic Stability Apparatus.

ARRANGEMENTS have been made by Glenn Curtiss to equip all machines designed by him in the future, with automatic mechanical stabilisers for lateral as well as for fore and aft stability. The controls, which will only act when the pilot fails to make the necessary movement, are operated by compressed air, the air-valve being controlled by the Sterry gyroscope.

The Wright Automatic Attachment.

THE Wright Aeroplane Company have also perfected an automatic stability apparatus, which will probably be on the market at the beginning of next year, but, at present, no information can be obtained as to its working or arrangement.

An All Night Vigil.

AN extraordinary experience befell M. E. Reid and Lieut.-Col. Henry C. Mustin on October 11th, when they started to fly from Cape May Point N.J., to Philadelphia, Pa., a distance of 95 miles. After they had been in the air about twenty-four minutes some of the cylinders of the motor blew out and the hydro-aeroplane

dived down to the waters of Delaware Bay. The pontoons kept the wrecked machine afloat until the next morning when the two aviators were picked up by a U.S. warship, after being in their perilous position for some 16 hours.

Another American Fatality.

WHILE giving a flying exhibition at Montgomery, Alabama, on October 23rd, the biplane of Louis Mitchell, was capsized in the middle of a spiral *vol plané*, and dropped to the ground from a height of 200 ft. The pilot was instantly killed.

Seven American "Expert" Aviators.

TWO aviators have qualified for the new "expert" certificate of the Aero Club of America, and the club has also granted the certificate to five officers who have fulfilled the Army requirements, which are a little more severe. The holders are: 1. Max Lillie. 2. Glenn L. Martin. 3. Lieut. T. de Witt Milling. 4. Lieut. H. H. Arnold. 5. Capt. C. de F. Chandler. 6. Capt. P. W. Peck. 7. Lieut. B. D. Foulnois.

Flying over the Mississippi.

ON the 5th inst., Tony Jannus, accompanied by his mechanic, on the Benoist hydro-biplane flew the 72 miles down the Mississippi River from Hardin, Ill., to St. Louis, Mo., in 1 hr. 18 mins.

Aeroplane Hits Windmill.

A JAPANESE, Motohisa Kondo, who had learnt to fly a Curtiss in America, met his death in an unusual way on the 6th ult. He was testing another make of machine with the control of which he was not familiar, and after two "straights" he attempted to make a turn, the machine got out of hand and collided with a steel windmill. The machine fell 40 feet and the pilot received injuries which caused his death almost immediately.

AVIATION IN PORTUGAL.

FROM some particulars which have been sent us by Mr. H. V. Roe, it is evident that Portugal is now taking aviation very seriously. Several of the prominent newspapers are collecting for the national subscription, and the shops prominently display aviation books and postcards. Out of the National Fund the Avro biplane and Maurice Farman biplane, and a Voisin hydro-aeroplane have already been bought, while some Brazilian officers have presented a Deperdussin to the Government. The Avro was officially handed over to the Minister of War on October 16th, when a crowd of about 20,000 people assembled to witness Mr. Copland Perry make some exhibition flights before the President. The flying ground is at Pedroucos, some 4 miles or so from Lisbon, between Belem and Algiers, but it makes a very difficult aerodrome, as it is only about 300 yards long by 200 yards wide and is bounded on two sides by trees, on the third by some gas-holders, while the fourth is more or less open, as it adjoins one of the military rifle ranges. It is in that direction that Mr. Perry nearly always steered, and his favourite trip was up the river to Lisbon, over the town and the Avenida returning over the River Tagus, the round

taking between 10 and 15 mins. The day after the machine had been handed over to the Portuguese Government Mr. Perry started off with a passenger intending to survey the country with a view to finding a permanent aerodrome. They disappeared in the direction of the town and were away for about an hour after which they continued flying in the opposite direction. Unfortunately when coming back the engine showed signs of giving up and the pilot decided, as it would be impossible to get back to the aerodrome, to bring the machine down into shallow water, about 50 yards from the shore, that being the only suitable place. Row boats were quickly to the rescue and the machine was hauled ashore little the worse for its bath. It is now called "Republica" the name being painted in red on both sides of the body and also in green underneath the wings, while a couple of little Republican flags are mounted on the outside struts. A good many flights have also been made by M. Trescarte on the Maurice Farman biplane. The Voisin machine is rapidly being erected, but the Deperdussin monoplane has not yet arrived, although it is expected shortly.



Mr. Copland Perry's mishap on the Tagus, when the engine petered out on the Avro biplane, and he came gently to rest on the water. Making the towing hawser fast; and, on the right, towing in the machine.

Models

Edited by V. E. JOHNSON, M.A.

WE would specially draw the attention of our readers to the encouraging prizes for models which are offered by the Royal Aero Club under their official notices (page 1,001) this week. We shall be referring to this matter further next week.

Scientific Model Building.

I. The Question of Weight.

Under the above title we propose giving a series of short articles, dealing with the subject of aero models, in which we propose to go into the question of *why* such and such a thing is done as well as *how* to do it.

We take first of all the question of *weight*. An item of paramount importance in model aeroplaning, theoretically, because in the case of models they do not as a rule fly fast enough to possess a high weight-carrying capacity.

Suppose, for example, you increase the area of the supporting surface—you thereby increase the resistance (also the weight) and, in consequence, diminish the speed—you may as a result require more power, which again means more weight, and so on.

It is no uncommon thing for the difficulty of getting a machine light enough to accomplish some allotted task, to necessitate the re-making of the entire machine several times. More especially, of course, if the builder be a comparative novice at the art. Supposing the machine to be in full working order, and something gives way, this part has to be strengthened. This means additional weight, and if the total maximum permissible has been already reached, necessitates the cutting down of the weight of some other part. Success can only be finally attained when all the parts are of the right strength and proportion.

The aeromodelist has continually to be asking himself the question, where can I cut off a certain amount of weight without unduly lowering my factor of safety? Models have, of course, been constructed which fly at a velocity of from 25 to 30 m.p.h., or even more, and which carry from a pound to a pound and a half per square foot. Generally speaking, however, models do not travel at anything like this speed, or carry nearly so high a loading per sq. ft. As a rule the usual flying speed is from 15 to 18 miles per hour, and the loading from 6 to 8 ozs. per sq. ft.

Successful models have even been constructed which have a speed of less than 10 m.p.h. But the average is about that stated above. Some of the leading aeromodelists consider the "ideal" loading to be 8 ozs., *i.e.*, half a pound per sq. ft. Everything, of course, really depends on the purpose for which the model was designed. For observational purposes and purposes of general aerodynamical study a slow flying model is very often an advantage. A slow flying model, exhibiting good stability, is certainly superior to a model of the "projectiloplane" type which owes most of its stability to its speed and speed alone.

How can we obtain maximum strength with minimum weight?

1. By a knowledge of materials.
2. By a knowledge of how to combine these materials in the most efficient and skilful manner.

Certain materials are obviously unsuitable, such as lead for example

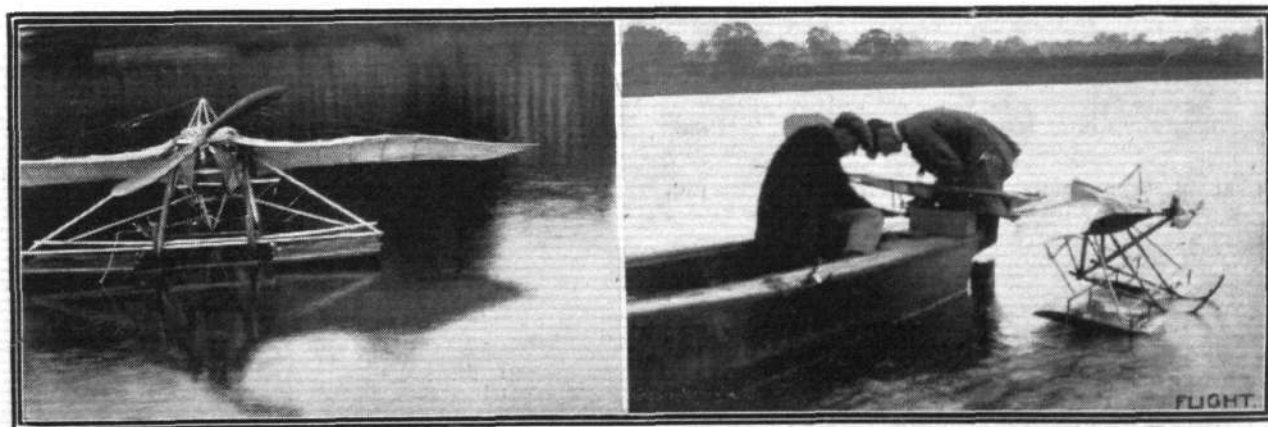
(save as a balance weight), not of necessity owing to its weight *per se*, but owing to the relation existing between its weight and its strength, &c.

The lightness absolutely essential to success necessitates, in addition to skilful building and best disposition of the materials, the use of materials of no undue weight relative to their strength; of considerable elasticity, and especially of large resilience, *i.e.*, capacity to absorb shock without injury. It is also an obvious conclusion that it may not be best to use the same substance for different parts of the machine—in certain places the forces are in tension and can be adequately provided for by the use of steel wires, &c., obviously useless where the forces are in compression. One of the great arts in model aeroplaning consists in so designing your machine that the forces in tension shall be a maximum and those in compression a minimum; generally speaking, the "ties" or "tension struts" on a model present little difficulty, it is the "compression struts" which require skilful building. A strut naturally tends to bend when transmitting a push, or compressive pull (example, the motor-rod carrying the rubber) if it be long, and will break unless great care is taken to keep it straight (by means, say, of kingposts and wires in tension).

In order to obtain the maximum strength with minimum weight no better method can be adopted than the constant use of a good pair of scales. Note (in writing) the weight (in grammes) of every trial and experiment in the alteration and change of material used. We would say—not only weigh everything—but weigh every bit of everything—were it possible. The writer knows of more than one instance where even an expert aeromodelist desiring to build a machine of a certain weight (10-oz. say) has found when the model is half built that the weight will come out at 11 ozs. or even 12 ozs. The design has then been abandoned and a fresh one commenced. Now had the designer carefully and accurately weighed samples of the materials he intended to use before commencing to build, he would have known that the total weight of the model would have exceeded the allotted 10 ozs., and would not have wasted his time in finding out by the rough method of trial and error something which he ought to have found out by more scientific means. It pays to be scientific—your models *may* not fly any better *in the end*—but the end is reached by easier, less expensive and less troublesome means.

Some three weeks ago we desired to build (if possible) a power-driven model hydro-aeroplane which should weigh (exclusive of fuel) 3 lbs. complete and which should have a loading of 8 ozs. per sq. ft. The power plant was to hand and its weight known. The machine was designed and samples of the materials to be used were weighed accurately to half a gramme where necessary (28 grammes approx. make 1 oz.). The weight came out at 3 lbs. 4 ozs. It did not appear worth while modifying the design for the sake of the 4 ozs. in this case. The machine was constructed—and when placed on the scales (yesterday) weighed exactly 3 lbs. 3½ ozs.

The reader must not think, however, that the above mentioned weighing was all that was done—resort was constantly had to the balance. Some things came out a trifle over weight—others under



MR. GOODALL'S MODEL AS A HYDRO-AEROPLANE.—The above photographs, omitted last week, were referred to in the model section. On the right Mr. Bragg-Smith and Mr. Goodall (the latter in waders) are re-adjusting the tail.

—the floats, for instance, designed to weigh 6 ozs., came out at 6½ the wings, struts, &c. (the machine is a biplane), came out half an ounce under, and so on. By *constantly* checking your work in the balance you know exactly how you are progressing, whether you are the wrong side or the right, whether you have half an ounce to spare which can go to strengthening say your landing chassis, and so on.

The reader must not conclude from the foregoing that we are advocating the construction of flimsy models. Every ounce of unnecessary weight on your model is not only an ounce more to carry, but an ounce more to land without damage at the end of the flight. There is one instance at any rate of an engineer who built a bridge so strong (*i.e.*, put so much material in it—in the wrong place) that it collapsed under its own weight. In an aeroplane it is, if possible, even more essential than in anything else that the materials used should not only be of minimum (permissible) weight, but that they should be of the very best, and lastly that these same materials should be combined in the most efficient and skilful manner. About this latter point we shall have more to say next week.

An Interesting Experiment with a 10-in. Span Glider.

Mr. R. T. Saunders sends us the following account of a somewhat remarkable performance of a 10-in. span glider, cut from a

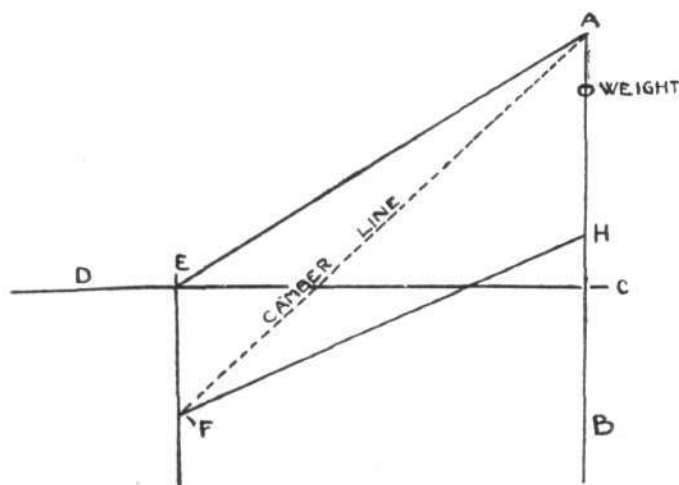


DIAGRAM OF ONE WING

linen card such as is used for club cards. The little glider was launched against a fairly good breeze, and kept head on to the wind, but rose to an estimated height of 25 ft., travelling backwards; it then seemed to lose grip slightly and dived, then rose once more and executed several "stunts," banking and turning. I quite gave it up for lost, as it was over a steep cliff, when suddenly it began a *vol plané*, coming back into the field where we were, then when about 3 ft. from the ground it turned once more and finally landed in quite approved style some 400 ft. away and 15 ft. below the point of launching.

I have formulated a system for the particular design, which you will see is quite on the Dunne principle, as follows: A to B centre line, A to C quarter the length of front edge (pre-decided), square line D with A B from C, place rule at A and intersect line D with half length of front edge which finds E. Square from E with line D, decide the ratio you prefer—I find an aspect ratio of six as per sketch very good, in the Dunne machine the chart is practically the same from root to tip, but to obtain more lift I increase the chord at centre, it does not appear to make the model less stable although H should never be brought below point C, the angle of front edge is the same for all sizes, which is the Dunne angle.

Mr. B. Fisher-Hussey's Model Gliders.

Mr. B. Fisher-Hussey, in reply to our query in October 19th issue, writes saying—that the glide in question was made from a height of 6 ft. 6 ins. In each of the drawings II and III the nose (half an inch long) has been omitted.

Replies in Brief.

S. FAULKNER.—The type of model of which you send us a photo is, scientifically speaking, very interesting, but you give no particulars *re* floats; in other words, the details of the photograph sent are incomplete.

H. D. CASTON.—We are very glad to learn that you both approve of and appreciate the changes made in FLIGHT, and that you really think it quite worth 3d., and the most interesting of them all. We can assure you that such appears to be quite the general opinion.

KITE AND MODEL AEROPLANE ASSOCIATION.

Official Notices.

British Model Records.

British Model Records.				
Hand-launched	...	{ Distance	... A. E. Woollard	... 477 yards
	...	{ Duration	... A. F. Houlberg	... 89 secs.
Off ground	...	{ Distance	... F. W. Jannaway	... 84 yards.
	...	{ Duration	... G. Rowlands...	... 30 secs.
Hydro, off water	...	{ Duration	... G. P. Bragg-Smith	... 25 secs.
Single-tractor screw,	{ Distance	... H. R. Weston	... 84 yards.	
hand-launched	{ Duration	... F. W. Jannaway	... 11 secs.	

Official Trials.—The trials which were fixed to take place on Saturday last October 26th, were postponed on account of the rain till this afternoon, November 2nd, at 3 o'clock. They will take place on the Plain, Wimbledon side of the Windmill.

Patriotic Lecture.—A patriotic lecture will be given at Caxton Hall, on November 8th, by Col. S. F. Cody. Any application for tickets should be sent in at once to save disappointment. All sixpenny tickets *sold out*.

27, Victory Road, Wimbledon.

W. H. AKEHURST, Hon. Sec.



MODEL CLUB DIARY AND REPORTS.

CLUB reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Aero-Models Assoc. (N. Branch) (15, HIGHGATE AVENUE, N.).

NOVEMBER 2ND. "Enfield" Trophy contest, postponed from last week.
Commence 2.30 p.m.

Blackheath Aero Club (48, HAFTON ROAD, CATFORD, S.E.).

DURING November, flying will take place at Grove Park, Nunhead and Blackheath as often as weather permits. Tickets for the forthcoming K. and M.A.A. lecture can be obtained from the secretary.

N. and M. A. E. were to be joined by Messrs. Chinnery and Rippon. During the month or so little flying had been done, the fogs thoroughly managing to spoil all work. At Nunhead, Messrs. Dollittle and Rippon have been flying their tractor monoplanes. The former members' machine is after the style of the original "Gnat," which in the present machine has been considerably improved both in flying capabilities and in general design. At Grove Park, Mr. A. E. Woollard flew his r.o.g. propeller model, which is of the 0-1-2-P type. The model showed excellent stability. Messrs. Chinnery and Nicholls were also flying their various machines at this ground.

Birmingham Aero Club (8, FREDERICK ROAD, EDGBASTON).

Monthly Report.—The work of the club during the last month has taken a different line to that previously, it being more of a practical nature. Very little model flying has been done, except for a few good flights by Mr. Baker, with a single propeller model. Some interesting experiments have been made with model gliders launched from kites. However, owing to the difficulty of hauling up the models without altering the adjustment, very few good results have been obtained. Several different types of kites have also been tested, one or two of a very original design. The "Trykle" full sized glider has not yet been repaired, but should be out any week now. Great strides have been made with the "Haddon" glider, the covering of the wings only now remaining to be completed. The span of this machine, which is a biplane, is 32 ft., chord, 6 ft.; rear elevator, 8 ft. by 4 ft. The glider is practically an enlarged Chanute type, with chasses and modified outriggers. The total weight complete is about 110 lbs., it being constructed throughout of bamboo. By experiments with full sized gliders the club is endeavouring to lift itself above the level of the ordinary model club and more in a line with the practical aero clubs of which there are unfortunately so few. It is hoped a little later to have a full sized aeroplane on the ground.

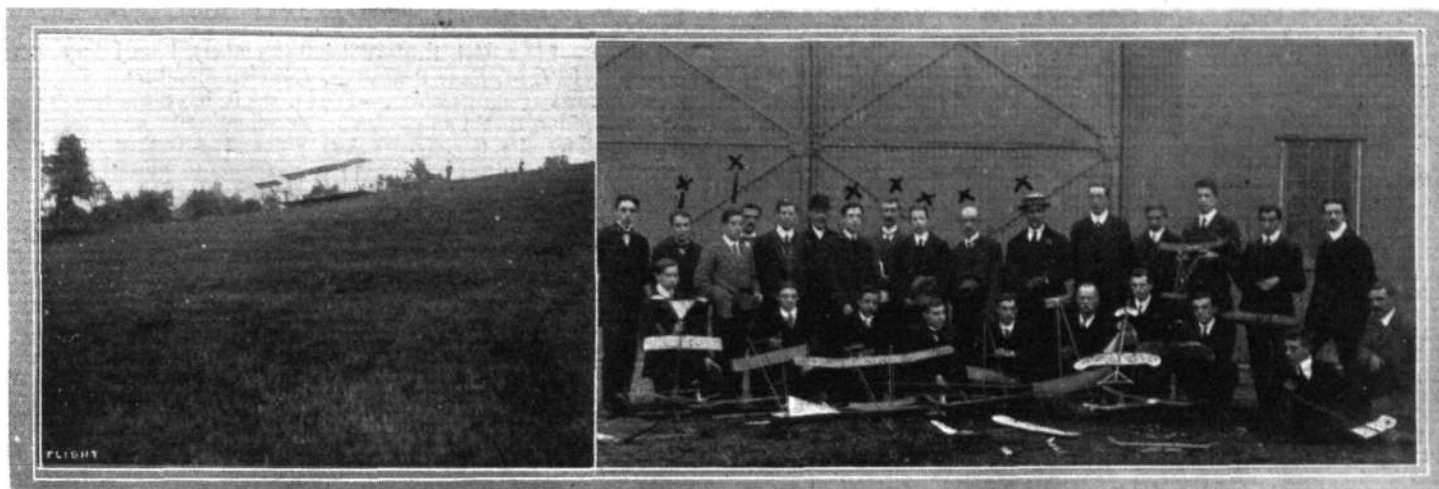
Bristol and West of England (Model Section) (3, ROYAL YORK CRESCENT, CLIFTON).

YORK CRESSETT, CLIFTON.
Monthly Report.—October 5th. Gliding meeting at Keynsham. Three glides were made: 1. R. V. Tivy (hon. sec.), not started at a high enough speed (photo A); 2. R. M. Haines (assist. hon. sec.), started with ropes and ten pullers, made a glide of 450 ft. at a height of 8 ft., *with* the wind, after a dive gliding-angle, allowing for slope of the hill, 1 in 20 to 1 in 30—this was Mr. Haines' first attempt; 3. R. Eldon Bush, started well, but was blown round and landed sideways, damaging one wind-extension and wing-skid (photo B). The group taken at the bottom of the hill—Mr. Haines in the seat—shows the damage done (photo C). Three photos taken by Mr. Haines. Conclusions:—That the glider, which was presented to the club, has an excellent gliding-angle; that the hill faces the wrong way, is not long enough, is not steep enough, and has too rough a surface; that the wing-skids should be replaced by wheels. After the gliding was over, a flight of 60 secs. was made by one of Mr. Smallcombe's models; this is a club record.

October 12th. Model flying competitions at Filton. The judges were Messrs. E. H. Desprez and A. E. Catford. 20 monoplanes and 7 biplanes competed. The awards were made as follows: Event 1, duration, R. T. Howse, 38½ secs. H.L. model flew at a great height; event 2, duration (R.F.G. models), L. S. White, Bath and Somerset Ae. C., two flights of 18 secs. (biplane); event 3, Landing, N. W. Edgar, 15 marks out of 25 (1-1-P model); event 4, directional control, R. C. Cross, Bath, whose model flew 350 ft. in a straight line, landing near the flag. Photo E, taken by Mr. K. Wall, shows the competitors and models. Those marked with an X, reading from left to right are: R. C. Cross, S. H. Baker (Sec. Bath and Somerset Ae. C.), L. S. White, R. T. Howse, N. W. Edgar, E. H. Desprez, R. V. Tivy, Major Boileau, A. E. Catford. In the foreground is a large steam driven model built by Mr. Noble. This machine weighs 6 lbs., is driven by a ¼-h.p. engine and has done short flights. Before the competition the competitors were shown over the works by the British and Colonial Aeroplane Co. The flying attracted numbers of spectators *vide* photo D. On October 24th, a lecture was given in the clubroom on "Gliding," by Mr. Jose Weiss (see report elsewhere).

Croydon and District Aero Club (Sec., 136A, HIGH STREET).

Monthly Report.—Since the recent letters in FLIGHT urging model aero clubs to give their attention to scientific model making rather than satisfy their own personal desire to beat somebody's distance, &c., with a "flying stick," I am pleased to report a decided improvement in the class of models, made by members of this club, has taken place. The club does not own a single "flying stick," and rise-off ground models, both tractor and otherwise, have been very much in vogue. Messrs. Pavely, C. Carter, C. Smither, H. Smither, W. Bell, C. Thumwood, F. Finnigan and P. Hart have all had decent flights with tractor models. Mr. Pavely's model, weight 34 ozs. with geared tractor, covered in fuselage, has made some splendid flights, but the chassis is now smashed owing to a collision with a kerb on landing after a flight. Mr. H. Smither has made a



BRISTOL AERO CLUB, MODEL SECTION.—Photo A. On the right photo E.

tractor model with seagull shaped planes. This model is very stable while the power lasts, but when unwound the model rocks from side to side and pancakes gently, rather than glides, down. Mr. Bell has made a model Morane-Saulnier, which flies very nicely and is very stable. The work of the club during the last month has been good. Members seem to get "keener" the more their models resemble full-size machines. These scale (or nearly scale) type of models, though they do not fly so far as the "flying stick" type, are certainly far more instructive and interesting to watch, and spectators at our flying meetings seem to think so too, judging by their increased number. The club has still room for more members.

Hendon Model Aero Club (8, MONTAGU ROAD, W. HENDON).

NOVEMBER 2ND. Monthly all-round trophy (2nd round).
Monthly Report.—Excellent progress during past month. New official club records: Duration, 50 secs., by G. Hedges; Distance, 155 yards, by E. Mitchell. Prizes, &c., have been won as follows:—Best all-round flight trophy, F. Short, with Blériot-type tractor (allowed 50 per cent. of marks); duration trophy and also distance prize, by E. Mitchell. Originality contest postponed. Messrs. Lawrence, Brown, Hayward, Hills, Doidge and Warwick have also put in good work. It is proposed to open a branch of the club at Colindale; Edgware and Colindale modellers please note.

Leytonstone and Districts Aero Club (64, LEYSPRING ROAD).

NOVEMBER 2ND, flying on Wanstead Flats (opposite brickfields), 3 p.m.; November 3rd at 9.30 a.m.

Monthly Report.—The increased numbers of interested spectators attracted at the week-end meetings fully justifies the action of the promoters of this young and enterprising club, and is a happy augury for the future. Good round progress has been made during the month in an increase of membership, enthusiasm and general results. One good feature is the healthy rivalry displayed in building the more scientific type of model as opposed to the flying stick. Messrs. S. Booth, G. Hawthorn, F. Hawthorn, F. E. Grattan, H. Bedford, H. Green and L. McCulloch have done admirable work, and have all made excellent flights, F. Hawthorn obtaining his third-class certificate for duration, F. Grattan 150 yards with r.o.g., and H. Bedford good flights with single tractor.

Paddington and Districts (77, SWINDERBY ROAD, WEMBLEY).

FLYING at Sudbury Hill every fine Saturday.

Monthly Report.—October 5th, Mr. Johnson's tractor competition, 1st, silver cup, H. Weston, 95 marks; 2nd, stop watch, C. Dutton, 61 marks; 3rd, pair of carved propellers, T. Carter, 48 marks. October 12th, duration handicap, Eagle monoplane, won by T. Carter, 62 marks; stop watch, F. Lane, 36 marks; dropellers, Rasmussen, 22 marks. October 19th, new rise-off-surface fixed up and proved a great success. In the trials which followed, C. Chalfont easily won the prize offered by the secretary for duration (r.o.g.) with 16 secs. Mr. Levy failed by $\frac{1}{4}$ sec. to qualify for second prize offered for 15 secs. duration. H. Woolley was successful in getting his single-screw tractor to rise off. He also put up a good performance with his 4 ft. 12-oz. monoplane, doing 57 secs., 56 secs.

and 52 $\frac{1}{2}$ secs. October 26th, rain prevented flying. Club is getting new winter quarters where meetings, with lectures, &c., will be held each week.

Reigate, Redhill and District (8, BRIGHTON ROAD).

NEXT quarterly competition for Rawson Cup to be held on December 21st. Two machines to be entered, both r.o.g.'s, one must be a tractor (marked on distance), other on duration. Minimum weight of each, 6 ozs. Beginners' competitions arranged. October proved a big month's work, fourteen members out flying. 60—70 secs. frequent, also $\frac{1}{4}$ mile. All busy on tractors in workshop. **Scottish Ae.S. ("ROCHELLE," LIMESIDE AVENUE, RUTHERGLEN).**

NOVEMBER 2ND, attempts on Scottish records, Paisley racecourse; November 9th, hydro-aeroplane competition, the pond, Alexandra Park; November 16th, monthly competition, distance and duration competition, Paisley racecourse.

Monthly Report.—The past month has been an exceedingly busy one in the history of the club. On October 5th a hydro-aeroplane meeting was held at the pond, Maxwell Park, where Messrs. Balden and Gordon put up a fine show, considering the nasty weather. October 12th saw the members at Paisley for r.o.g. competition. The excellent weather brought out a good field, and two records were made. The chief results were: Mr. Wm. Craig Boyd, 739 ft., 33 $\frac{1}{2}$ secs.; Mr. J. C. Balden, 695 ft., 23 $\frac{1}{2}$ secs. Mr. Boyd had 33 $\frac{1}{2}$ secs. on two separate occasions. October 19th, monthly competition at Paisley. Results: Duration, Mr. W. G. Langlands, 34 $\frac{1}{2}$ secs.; distance, Mr. J. S. Gordon, 726 ft. On October 26th, at Maxwell Park, a hydro-aeroplane meeting was held in miserable weather; the chief flyers were Messrs. Balden, Boyd and Gordon. The workshop at 15, Holland Street, Glasgow, presents an animated appearance in the evenings, and it is gratifying to note that the members are taking full advantage of it. Experiments in hydroplanes, propellers, planes, &c., are being carried out, and a propeller-testing "Johnson"-type apparatus has been fitted up. Altogether the club's prospects for the ensuing season are decidedly bright, and Glasgow readers desirous of joining a real live model aero club would do well to write the secretary at the address given above.

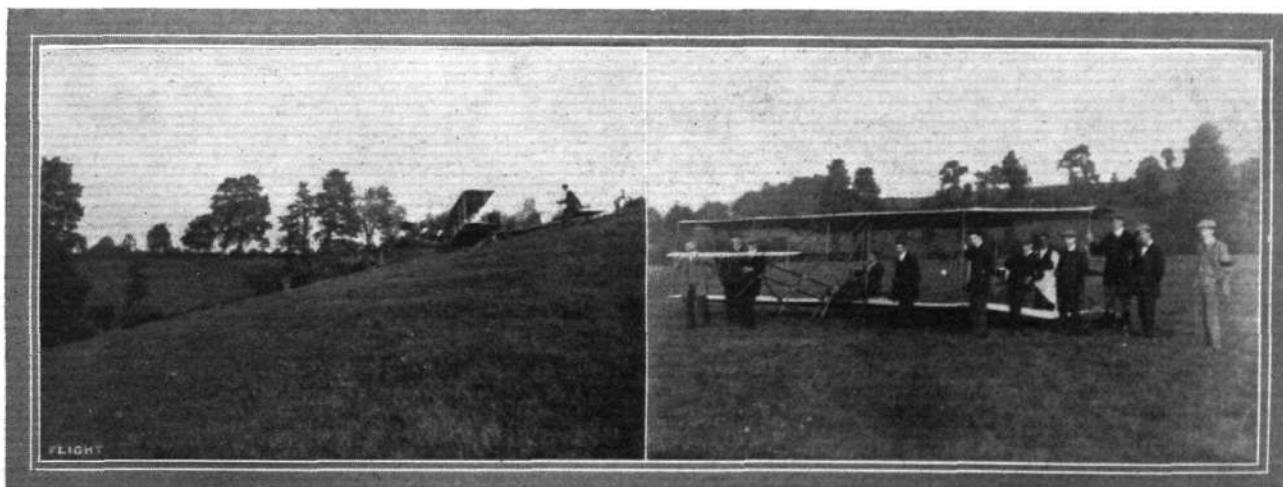
Scottish Records.

Hand-launched ...	Distance ...	J. S. Gordon ...	2,006 ft.
	Duration ...	James Myles ...	65 secs.
Rising-off ground ...	Distance ...	Wm. Craig Boyd ...	739 ft.
	Duration ...	Wm. Craig Boyd ...	33 $\frac{1}{2}$ secs.
Hydro-aeroplane, off water	Duration ...	C. F. Arthur ...	27 $\frac{1}{2}$ "

Sheffield Model Aero Club (35, PENRHYN ROAD, SHEFFIELD).

NOVEMBER 2ND, cup contest at Norfolk Park, 3 p.m., near band stand.

Monthly Report.—Great progress is being made with the above club, for three members, Messrs. G. H. Dewsnap, H. Slack and E. Elliott are building full-sized machines. Mr. M. D. Manton has given a splendid silver aviation medal to be competed for by tractor biplanes. Mr. Dewsnap is looking forward to having his glider completed by Christmas Day, when he hopes to give some gliding experiments, when, on the same day, Mr. Manton's medal will be competed for. Master C. E. Worrall, the youngest member of the club, has won the duration



BRISTOL AERO CLUB, MODEL SECTION.—Photos B and C.

record for the month with 37 secs. The best added flights for the month being thus: J. P. Worrall, 61½; R. E. Rayner, 58½; G. H. Dewsnap, 46½.

Windsor Model Club (10, ALMA ROAD, WINDSOR).

NOVEMBER 2nd, Tractor meet in Home Park, 2.30.

Monthly Report.—During the past month all the members have been experimenting with tractors. Two scale models, a tractor biplane, and three tractor monoplanes have been brought out, and two of them, S. Barton's "Ant insectre," and S. Camm's "A. B. Clark 76," have proved very successful; flights of 120 yds. being obtained on many occasions. E. Dowsett's scale "Avio" has not yet been successful. No practice has been possible with the glider, owing to the absence of a good wind. Stanbrook, F. Camm, Hamblin and Parsons are constructing various models.

Yorkshire Aero. Model Soc. (53, WEST STREET, LEEDS).

NOVEMBER 2nd. Poppy Fields, Beeston.



CORRESPONDENCE.

Correspondents communicating with regard to letters which have appeared in **FLIGHT**, would much facilitate ready reference by quoting the number of each letter.

The Fatal Dive.

[1660] In letter (1632) of Thomas Preston Brooke, is the statement that Paul Peck's machine "pitched downward with its elevator raised to the limit," and in the article, "Parke's Dive," in your issue August 31st, is the statement that "at point C he drew elevator-lever hard back against his chest" . . . and "from C to D (against the wind) the machine was completely out of control, diving headlong at such a steep angle that all spectators described it as vertical and stood, horror-stricken, waiting for the end."

I should be glad to hear if Mr. Brooke can give the direction of the wind at the time of Peck's accident. Was Peck heading into the wind at the time? Also if eye-witnesses of Oxley's, Fenwick's, or other accidents due to dives would kindly forward particulars, stating if machine was heading into the wind at the time; it would be information of the greatest value.

To me it appears that even stable machines must not be expected to flatten from the vertical when heading into the wind. It is significant that when Lieut. Parke, in spiralling, got the wind he was able to flatten out.

It is a reasonable assumption that if a machine drifts in winds when "beam on" owing to the side elevation areas, it will be liable to drift the more when vertical, having a greater plan area exposed, it will be liable to be blown backwards when diving head to the wind. The fact that no backwards drift has been observed does not disprove this theory—the tendency is there, but evidently the pulling of the elevator up to its limit is sufficient to keep the flight path vertical. To me, it appears that the elevator is "used up" in preventing drift, and leaves nothing in hand for flattening out with. Spiralling then from up wind to down wind would bring the wind pressure under the wings, and the drift factor would be with the desire of the pilot to flatten out.

There must be a critical angle from which it is impossible to flatten out against the wind, I cannot and refuse to believe that all dead pilots lost control, this behaviour of a machine (when diving) in not flattening out when called upon has not been satisfactorily explained by assuming the pilot lost control, but we have evidence that Peck's and Parke's elevators were hard up to the limit, and in the latter case against the wind. Parke was not able to flatten out against the wind; more information from eye-witnesses as to the flight path being into the wind or not would help greatly to substantiate my theory.

Southport.

JOHN GAUNT.

Clutches on Aeroplanes.

[1661] With regard to the arrangements of the engine, &c., on an aeroplane, would it not be possible for the engine and propeller to be connected by means of a friction clutch on the same principle as a motor 'bus. Thus the engine could be running at top speed, and the propeller stationary. This would render unnecessary the use of a lot of heaving, straining mechanics hanging on to the tail of the machine, and if the engine were fitted with a starting lever inside the pilot's cabin it would do away with the horrible and dangerous performance known as "propeller swinging."

Barking.

H. OLIVER.

Brakes on Aeroplanes.

[1662] In your comment on letter No. 1647, by Lieut. E. R. Knox-White, you say that the only aeroplane using a brake to your knowledge, is the Cody, which overlooks the claims of the Breguet biplane. I was present when that fine pilot, M. Moineau, put two Gnome-Breguets through their paces for the Government, and I assure you that the brake was so effective that he was enabled to pull up the machine, a none too light construction, travelling at anything between 55 and 60 miles an hour, in 25 yards or so. Wishing FLIGHT every success in its new life.

Farnboro'.

L. E. MORELAND-GILLMAN.

[We are compelled to hold over other correspondence.—ED.]

AERONAUTICAL SOCIETY OF GREAT BRITAIN.

Official Notices.

Elections.—Lieut.-Col. R. de Villamil (Member), John Johnston (Student), and W. M. Fane-Pendlebury (Foreign Member).

Aeronautical Examination.—The Council have under consideration a proposal that an elementary examination in aeronautics be instituted by the Society. Before proceeding further in the matter the Council would be glad to receive notification from anyone who would be desirous of sitting for such examination. Letters should be sent to the Secretary, at 11, Adam Street, Adelphi, W.C.

Meetings.—The first general meeting of the Society for this session will be held on Wednesday, November 13th, at 8.30 p.m., at the Royal United Service Institution, Whitehall, when Mr. A. E. Berriman, A.F.Ae.S., will read a short paper, to be followed by a discussion, on "Aeroplanes in the Light of the Military Trials." Leading constructors, military officers and others have promised to attend.

The second meeting will be held on Wednesday, November 27th, at 8.30 p.m., R.U.S.I., when Brig.-Gen. F. G. Stone, R.A., will read a paper on "Aircraft as Targets for the Artillery."

BERTRAM G. COOPER, Secretary.



Bargains for Model Makers.

WE learn from Mr. Weston, who is again very active in the model world in connection with the Star Model Aeroplane Co., that they have purchased all the W.H.C. patterns and accessories. Our model advertisement columns show that Mr. Weston is offering an excellent selection of model materials.

A New Catalogue.

MESSRS. AERONAUTICAL ACCESSORIES, of 39, St. James's Street, Piccadilly, W., are making a speciality of clothing, &c., for aviators. A new list which they have published gives particulars of the Warren safety helmet, leather and other suits for flying, goggles, top boots, gauntlets, and other things specially suitable for use by aviators.

The "Daily Mirror" War Map.

IN order to follow intelligently the course of events now taking place in the Balkans, it is necessary to have a good map, and that issued by the *Daily Mirror* is one of the best for this purpose. When it is stated that it is produced by Mr. Alexander Gross, of the Geographia Designing and Publishing Co., it will be understood that it is a very clear and easily read map, which is a most important point where the names of places and districts appear rather awful to a plain Anglo-Saxon. The price of the map is 6d. net on paper, or mounted on cloth 1s. 6d. net.



PUBLICATIONS RECEIVED.

The "Daily Mirror" War Map of the Balkans. London: The "Geographia" Designing Co., Ltd., 33, Strand. Price 6d. net.

Catalogue.

Austro-Daimler Aero Engines. The Austrian Daimler Motor Co., Ltd., 112, Great Portland Street, W.



Aeronautical Patents Published.

Applied for in 1911.

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